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JULY 1957—35 CENTS

MODEL AIRPLANE NEWS

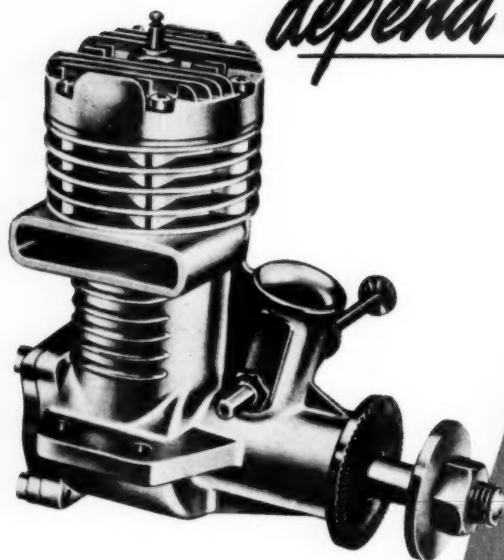


Hawker Fury

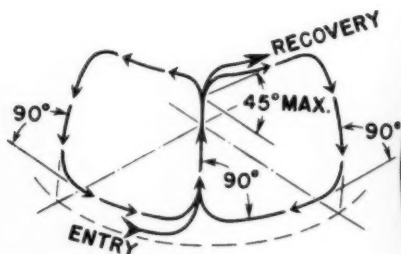
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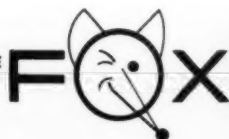
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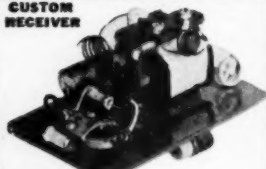
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INTERNATIONAL COMPETITION NEWS



► In a race against time to finalize rules for FAI Class models to go into effect for the 1958 elimination setup, the FAI Model Commission has released the final tabulation of member country votes as outlined in previous issues. As this issue reaches the news-stand early in June, the American modelers will have about 2 1/2 months to build and test new rules models. This is cutting it close, but it can be done.

The one US vote was cast by AMA after polling the Contest Board. The Board's feelings did not follow the voting results, but the CB vote was very close and could have gone either way. While the final tally of member country votes was rather one-sided it was not unanimous. The final official results direct from Paris headquarters follows:

Reduce rubber weight in Wakefield models from 80 to 50 grams—for 18, against 9, abstaining 1.

To adopt 300 gram per cubic cent. power rule—for 21, against 5, abstaining 4.

All models will be hand launched. To put the Power model rules into readable figures we have: Power loading—173.5 ounces per cubic inch; Wing loading—4.6 ounces per 100 square inches.

To assist one in visualizing such a model, the following slide rule figures should be helpful and interesting. Engine .049: Total maximum area 189, minimum weight 8.7 ounces; Engine .09: Total maximum area 376, minimum weight 17.4 ounces; Engine .15: Total maximum area 565, minimum weight 26 ounces.

To repeat, the eliminations to select our 1958 Power and Wakefield teams will be held this year August 24-25 at about 25 cities and areas in the country. Next month we will list these places.

Interested modelers in both Canada and the U.S. have professed a very great interest in maintaining and running some kind of yearly International event for Power and Wakefield. Several very good ideas have come forward, most of them using the 1957 Nationals as a site for such a venture. However, due to the very tight schedule and shortage of many things, the only solution seems to be in having interested countries bring their teams to the Nats and have their members enter the regular Nats FAI events. The winning country can, therefore, be picked from the final results of each event. Old timers will remember that this was done at the Nats before the war and created a great deal of interest. If many countries choose to compete in this way, it is entirely possible that some of the Nats events could be won by people outside the old 48.

Ed Dolby

AMA International Competition Committee

"AIRCRAFT CAMOUFLAGE AND MARKINGS 1907-1954"



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MODEL AIRPLANE NEWS

JAY P. CLEVELAND, President and Publisher

JULY 1957

Vol. LVII, No. 1

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by
William
Winter



► If the authorization by FCC of various powerful transmitting services on the "nightmare frequency" of 27.255 wasn't so serious, it would be funny. In fact, if you are not a modeler—but, of course, you are, you'd find it funny. Sunspots and hams, and garbled voices in strange languages and hairy spin-ins we bear with a Frenchman's shrug of the shoulders but, senior, when you get 250 or 500 watts carrier in the same county, you've had it, and so has the dealer, the jobber, and the manufacturer, although these happy chaps have still to make the discovery.

Long Islanders, for example, will rejoice that the traffic lights along Bethpage Turnpike, from Hempstead to Farmingdale, will be 27.255 in the very near future, and people like GE who dream up this stuff will probably have taken care of any possibility of interference from you or anyone else. What this potent output will do to Westchester County in New York, Brooklyn, and the Connecticut Shore remains to be seen. Such systems now operate in Los Angeles, Evansville, and Chicago, and the number of installations will grow. Rumored complaints from truckers, and people with RC garage doors, indicate the situation

also will grow more lively with the passing of time. Ah, there's fun ahead, rangers!

► In a letter to this magazine, and to a competitor whom we shall call friend for this month, Ken Willard, Van Nuys, Calif., reviews the situation so coherently, that MAN at Work breaks with tradition by running the letter almost verbatim, plugs for LA and all. (Los Angeles, like the Navy, is the modeler's friend, which reminds many of us of sundry unenlightened communities who prefer delinquents to those unbearable motors.) Your ship, Ken Willard. . .

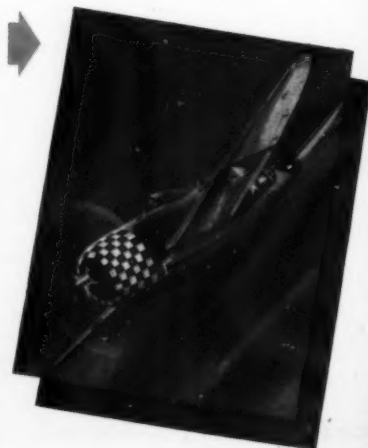
"You hear about the interference which is being created in many areas in the United States on the frequency of 27.255 megacycles, resulting from the FCC's relaxation of the original 5-watt power limit for transmitters on this frequency and their subsequent authorization of transmitters up to as high as 500 watts," Ken begins. "The more powerful transmitters completely block all other transmissions on the same frequency for very great distances.

"The assignment of this frequency in the large metropolitan areas such as Chicago, (Continued on page 7)

NEXT MONTH'S COVER
Republic P-47 Thunderbolt

PLANE ON THE COVER

Fastest fighter of its day—about 1930, the British Hawker Fury had a top speed of 214 mph at 13,000 feet. Powerplant was a Rolls Royce Kestrel of 525 hp at sea level. Contemporaries were the U.S. Boeing and Curtiss biplane fighters. Tail and fuselage somehow suggest Hawker Hurricane of World War 2 fame.





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(Continued from page 4)

► Why do traffic lights have to be on 27.255 mc? Does FCC ignore the investment made by many hobbyists, and mem-

► The Greater Hartford Model Plane Club, who challenged any and all comers (you know these things if you read the Contest Calendar) builds wide variety of team jobs. Maybe they don't shake apart like the hopped up rods flown by the Texas Rattlers, but pic here of 10 guys and 10 nifty crates indicates the boys will back their play. Any challengers? . . . Trio-O-Rama, U. S. Highway 46, Parsippany, N. J. is the place to go in the New York area if you want to see planes, cars or boats in action. Program every Sunday, (Continued on page 40)

11-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044

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Most famous of the race plane builders and fliers, Steve Wittman, with his Bonzo No. 1. Wittman racers pioneered Cessna gear.

Strict rules governing design, construction, flying characteristics, and pilot ability, for safety. Speeds now, about 200 mph.

Will the Midgets Come Back?

by DON BERLINER

**A truly great era in sport-
ing aviation is far from
finished—five meets coming.**

► Ten years ago a group of far-sighted airmen began an experiment intended to change air racing from the expensive and dangerous spectacle it then was, into a safe, sensible and reasonably inexpensive sport.

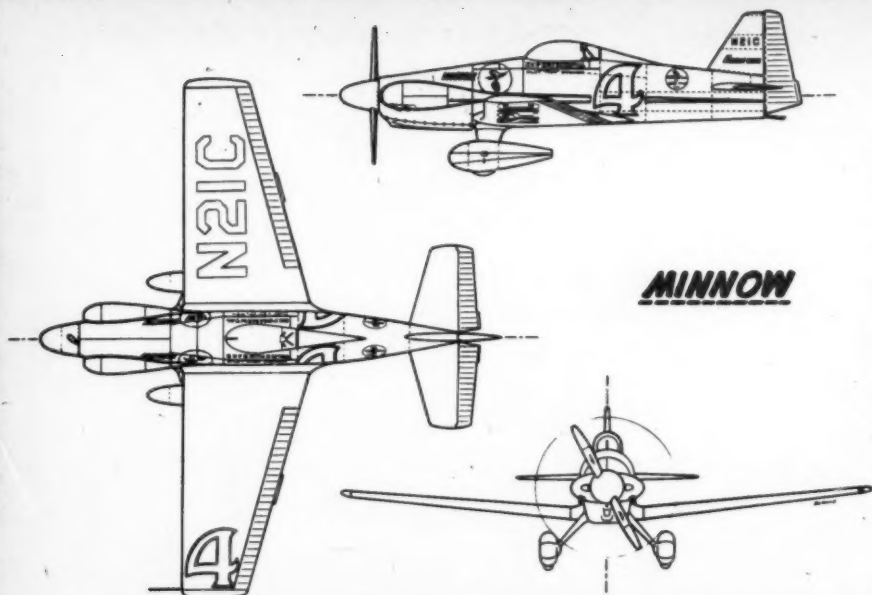
The idea these men proposed was a new class of racing planes: "midget racers". Their plan was to insure the safety, close competition and full participation of these midgets with a very tight set of rules covering design, construction and flying characteristics of the airplane, as well as the ability of the pilot.

Until the birth of the midgets, air racing had been famous for its unlimited classes and free-for-all events, such as Thompson and Bendix Trophy Races. The strict regulations suggested at this point caused some old-timers to shake their heads in doubt, but there were so many great American fliers involved, men like Art Chester, Steve Wittman, Tony LeVier and Benny Howard, that this thing could not (continued on following page)

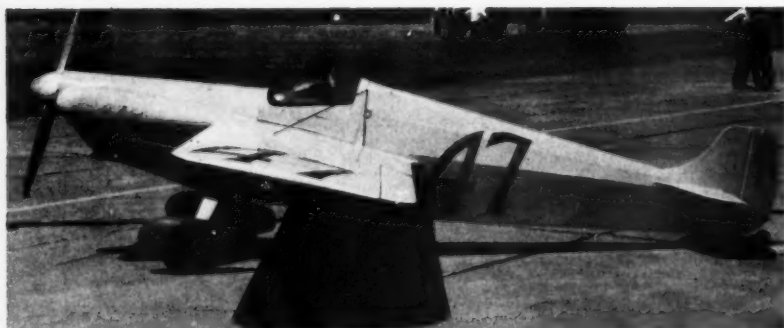
At the Niagara Falls trials in 1952, Bill Falck knocked off all-time high of 208.81 mph in famous Rivets. Rules limit engines

to 190 cu. in. displacement, about 85 hp. Minimum weight only 500 pounds, minimum wing area 60 sq. ft., about 15-20 ft. span.





Probably best known to modelers is famous Shoestring. Number 16 was piloted by Richard Ohm.



Lil Rebel, was flown by Charlie Bishop. All these photographs were taken by John C. Durand.

Stardust typifies the classic Goodyear Racer layout. Fixed landing gears specified by rules.



be taken lightly. And so all aviation got behind the midgets.

The Goodyear Trophy event at the 1947 Cleveland National Air Races was the public's first look at the midgets and it was love at first sight. Twelve of the little speedsters battled it out in heat after heat directly in front of the grandstand and completely stole the show from the big Thompson-class racers.

When the dust had all settled, the winner, at 165.857 mph, was little (110 lbs.) Bill Brennand flying "Buster," Steve Wittman's 1934-vintage racer modified to fit the new rules. Second was Paul Penrose in Art Chester's beautiful V-tailed "Swee' Pea" and next were two all-metal Cosmic Winds flown by Lockheed test-pilots "Fish" Salmon and Tony LeVier.

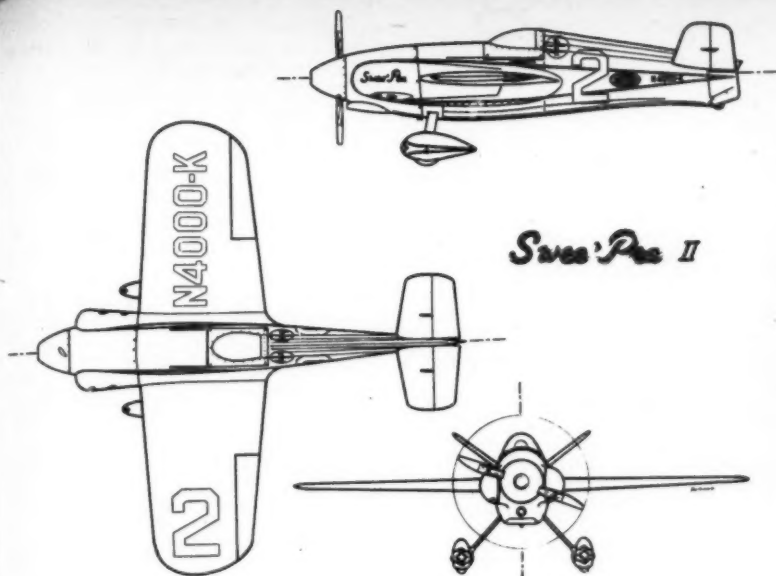
In January, 1948, the first Continental Trophy Race was held as a feature of the Miami All-American Air Maneuvers, Brennand and "Buster" were again victorious, with Salmon this time placing second. Thus the two main races were established; there would be many other races during the ensuing years, but Goodyears and Continentals would always be the really big ones.

The second Goodyear attracted two dozen midgets, including some which were destined to rank among the all-time great: Steve Wittman's "Bonzo," Bill Falck's "Rivets," Dave Long's "Long Midget" (Midget Mustang). Other first-rate newcomers were Phil Quigley and the Pitts Special I, Art Chester's new "Swee Pea II" and the Cosmic Wind "Ballerina," flown by Bob Downey.

"Fish" Salmon won the final race at 169.108 mph, with Wittman, Chester and Brennand close behind. Speeds had not increased much over the first year, but there were many new people involved now and the midgets were firmly established as the main attraction of air racing.

The team of Wittman and Brennand really came into its own during the 1949 Miami races as they placed one-two, with Steve setting a new national mark of 176.867 mph. By now the genius of this veteran pilot-designer-builder was having a strong influence upon the design of midgets. Numerous ships displayed ideas: wide "barn-door" wings, simple light-weight construction, spring-steel landing gear and the unique scimitar propeller.

In spite of this, there was a constantly increasing variety of 190 cubic inch class racers. There were ships constructed of all combinations of wood, metal, fabric and plastic; there were shoulder-wings, mid-wings and low-wings; there were thin ones and fat ones and, for the first time in the 1949 Cleveland Races, there was a pusher with its rear-mounted prop.



Tom Cassutt's No. 111 favored barndoor type of wing—also a feature of Steve Wittman's ships.

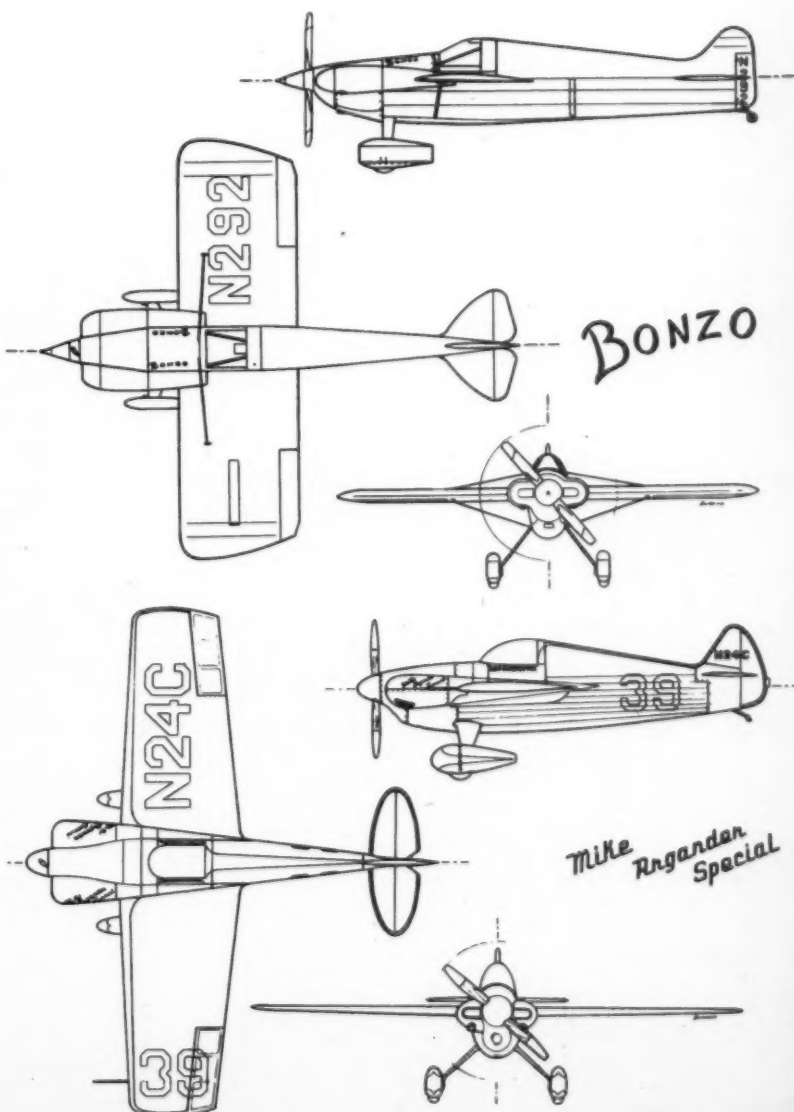
Three small races were held in the Spring of 1949 and they served so well as preparation for the big Labor Day Nationals that a similar arrangement was used for several years. Surprise winner of the '49 Goodyear was Bill Brennand in old "Buster," with Californian Keith Sorenson second in the Mike Argander Special and Bill's teacher Wittman third. Winning speed was 177.340 mph.

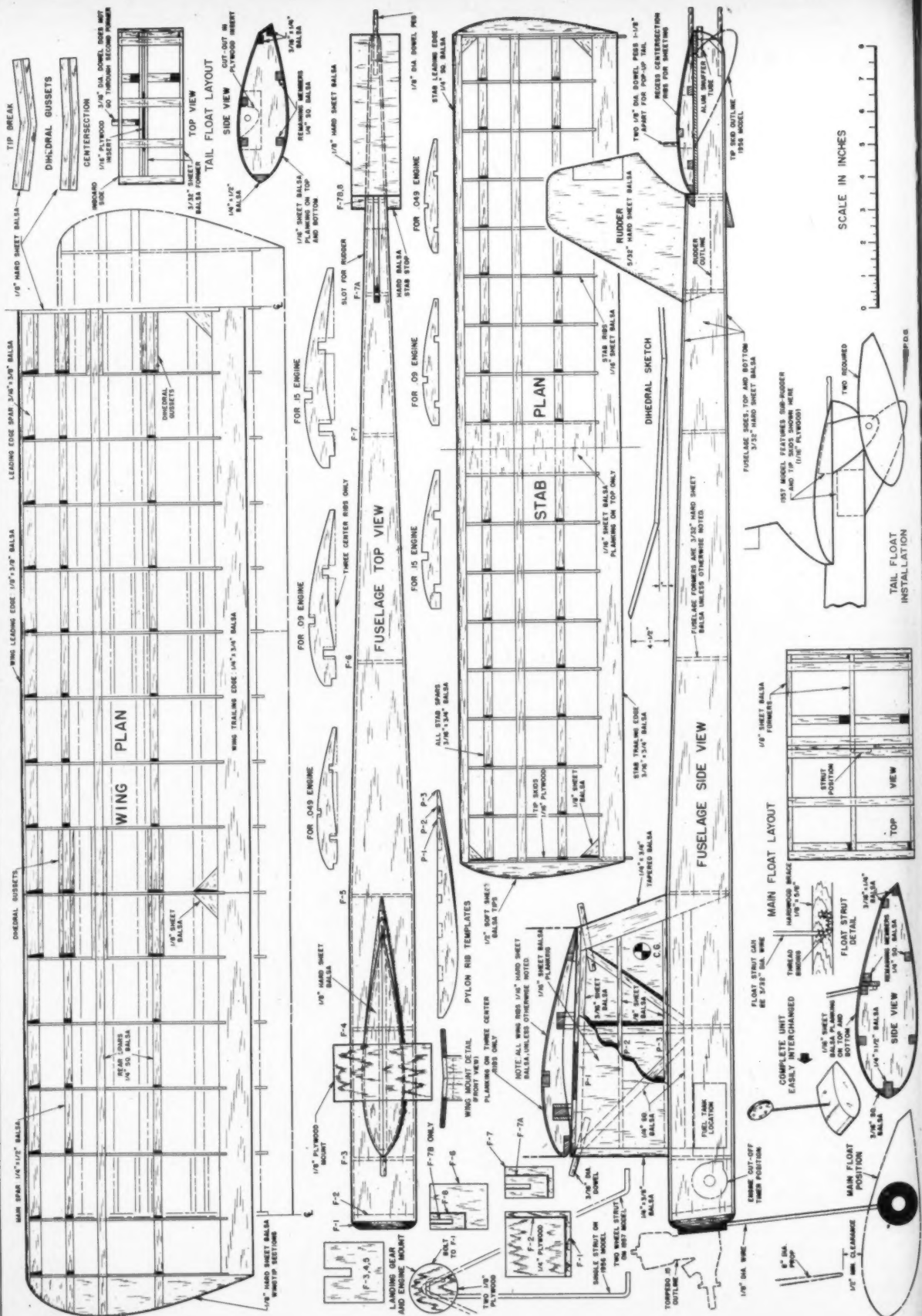
Wittman led Sorenson across the line in the finals of the 1950 Continental at Miami and gave the record a big boost to 185.406 mph. Regional meets in Chattanooga, Tenn., Reading, Pa., Westchester, N.Y., and San Jose, Cal., followed. When the National Air Races was cancelled and Goodyear bowed out as a sponsor, Continental Motors backed the big race at Detroit's International Air Fair. After favorite Bob Downey was eliminated, teammate John Paul Jones flew the Cosmic Wind "Little Toni" to a 187.785 mph record and victory.

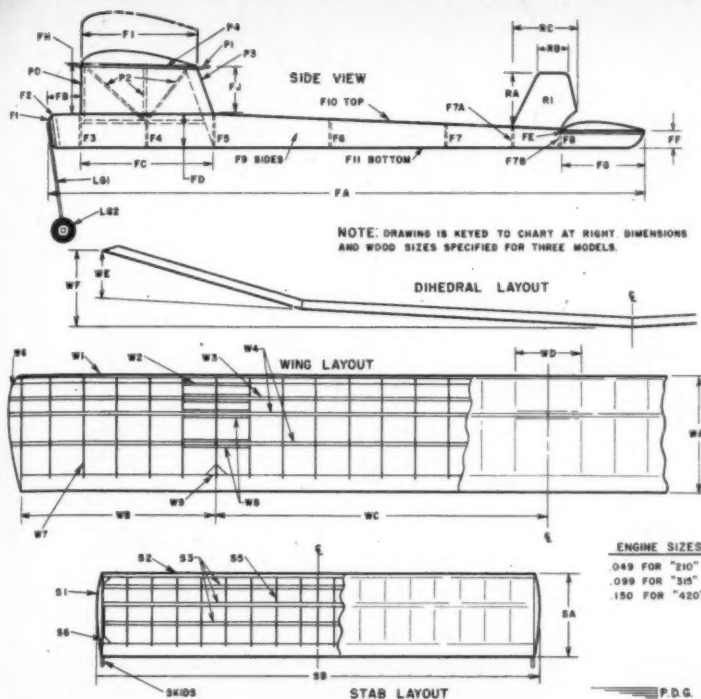
The decline of air racing had begun in 1949 with the tragic crash of Bill Odom in an F-51 at Cleveland. All events for unlimited-class planes were cancelled shortly thereafter, leaving only the midgets. The 1951 National Air Races at Detroit was the first and last held for this one class alone. This series of Continental Race heats, won by Jones' record 197.218 mph in "Shoe-string," was among the finest ever seen. Unfortunately, this was not enough to save one of the world's great sporting events from another step toward extinction.

There were two races held in 1952. The first, in Chattanooga, was the scene of a great upset and the emergence of a new star: Bill Falck, in his strange-looking "Rivets," edged out the old master

(Continued on page 52)







DIMENSIONS - INCHES			WOOD SIZES - (S) SHEET		
MODEL	"210"	"315"	MODEL	"210"	"315"
FA	28"	33"	F1	1/16" PLY	1/8" PLY
FB	1-1/4"	1-5/8"	F2	1/16" PLY	1/8" PLY
FC	6"	7"	F3	1/16" (S)	3/32" (S)
FD	1-1/4"	1-5/8"	F4	1/16" (S)	3/32" (S)
FE	1/8"	3/16"	F5	1/16" (S)	3/32" (S)
FF	3/4"	7/8"	F6	1/16" (S)	1/16" (S)
FG	4"	4-1/2"	F7	1/16" (S)	1/16" (S)
FH	2-1/2"	2-3/4"	F7A	1/16" (S)	1/16" (S)
FI	5"	6"	F7B	1/16" (S)	1/16" (S)
FJ	2-1/4"	2-1/2"	F8	1/16" (S)	1/16" (S)
RA	3-1/4"	3-3/4"	F9	1/16" (S)	1/16" (S)
RB	1-1/4"	1-1/2"	F10	1/16" (S)	1/16" (S)
RC	4-1/4"	4-1/2"	F11	1/16" (S)	1/16" (S)
			W1	1/16" x 3/16"	3/32" x 1/4"
			W2	3/32" x 3/16"	1/8" x 3/8"
			W3	1/8" x 1/4"	3/16" x 3/8"
			W4	1/8" x 1/4"	3/16" x 3/8"
			W5	1/8" x 3/4"	3/16" x 7/8"
			W6	1/16" (S)	3/32" (S)
			W7	1/32" (S)	3/32" (S)
			W8	1/16" (S)	3/32" (S)
			W9	1/16" (S)	3/32" (S)
			W10	1/16" (S)	3/32" (S)
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			W92	1/16" (S)	3/32" (S)
			W93	1/16" (S)	3/32" (S)
			W94	1/16" (S)	3/32" (S)
			W95	1/16" (S)	3/32" (S)
			W96	1/16" (S)	3/32" (S)
			W97	1/16" (S)	3/32" (S)
			W98	1/16" (S)	3/32" (S)
			W99	1/16" (S)	3/32" (S)
			W100	1/16" (S)	3/32" (S)

ENGINE SIZES
 .049 FOR "210"
 .059 FOR "315"
 .150 FOR "420"



Vertical take-offs (VTO) come natural to the Space Tigers. Chart, top, will allow the expert reader to build .049, .09, as well.

Seafaring job as marine engineer didn't stop author from cooking up a swell free flight. Smaller versions sure getting attention.



SPACE TIGER

by RICHARD OSCAR PAUL

Off land or water this .15 powered free flight has what it takes—but is not cranky. Adjustments built in.

► The Space Tiger is the result of several years work and a series of designs to perfect a contest model which would be second to none at International finals and local elimination meets.

At the finals, the world's finest builders gather with one thought in mind, to win the world's model airplane championship for the country they represent. The model first has to show its merits in several contests in the builder's own country, winning a place in the four-man team, selected from the highest flight times, to represent that country.

The Space Tiger has no wins to its credit, but has made a good showing to satisfy me and all those who witnessed this model in flight. I am sure that the expert and beginner will find this article a most important feature to help stimulate interest in free flight, especially among the kids now coming up. My main purpose in writing this article is to give the less experienced modeler an equal chance to build a model of this type for hot contest competition which is now limited to a select few.

The Space Tiger was

(Continued on page 43)



1. To make spinner mold, cut out cross-section template, pivot on stand. Template guide provided by the base.

Mold It!

by
**HARRY A.
SCOTT**



2. Rotate template, applying plaster slowly, until completely built up. Plaster is wet.



5. Pieces of wood are used for spacers to strengthen structure and facilitate next step. Keep spacers back from outer edge.



6. Covering applied over spaces is doped or shellaced to waterproof form. This also cuts down amount of plaster of Paris.

Those difficult-to-make cowls, and other compound-curve shells, can be built up out of cheesecloth layers, household glue. First, you need plaster of Paris mold, then . . .

► When carved block balsa is too heavy and tissue-covered structure too flimsy for a particular job like a cowl, and the contours are too complicated for sheet-balsa skins, there is still an inexpensive way to solve the problem. But it isn't a sit and wish method. It is lamination. Laminating doesn't outdate the old proved techniques but it does add another method to the roster.

One successful project was a cowl for a scale model, using a male plaster mold, six ply cheesecloth, and household glue. It covered a structure like those used in paper skinned planes, yet gave the rigidity and form of a carved block, only with less weight and the exact contour desired.

In developing the process many failures were encountered, among them the combinations of shellac and tissue,

dope and tissue, shellac and newsprint, dope and newsprint, shellac and cheesecloth, and dope and cheesecloth. Paper sheets of any type necessitated a great many layers, allowing no weight advantage, and both shellac or dope proved too flexible a fixing agent. An unsuitable means for this particular case is the use of paper mache, its thickness being difficult to control. A female mold and flour added to the water used in pulverizing the newsprint gave a fair surface for finishing, and sufficient strength and weight qualities.

Thus, through elimination, the plaster of paris mold, cheesecloth base, and glue fixing agent survive. Here are a few pre-step by step instruction tips for those not familiar with plaster work. Add water a little at a time until the consistency is that

(Continued on page 60)



3. Allow to dry, then sand and finish with shellac, and wax. It provides useable surface to work on when building up a shell.



4. Cut templates from tracings of frames and bulkheads. Use wood, sheet metal, cardboard, etc., glue to baseboard in position.



7. Plaster is filled in between the spaces and, when finished, is shellaced, waxed. A 1 x 6 sheet metal piece is a good tool.

9. Brush in small amount glue. Before drying, remove; no stick. Clean glue spots from mold, grease vasoline lightly on mold.

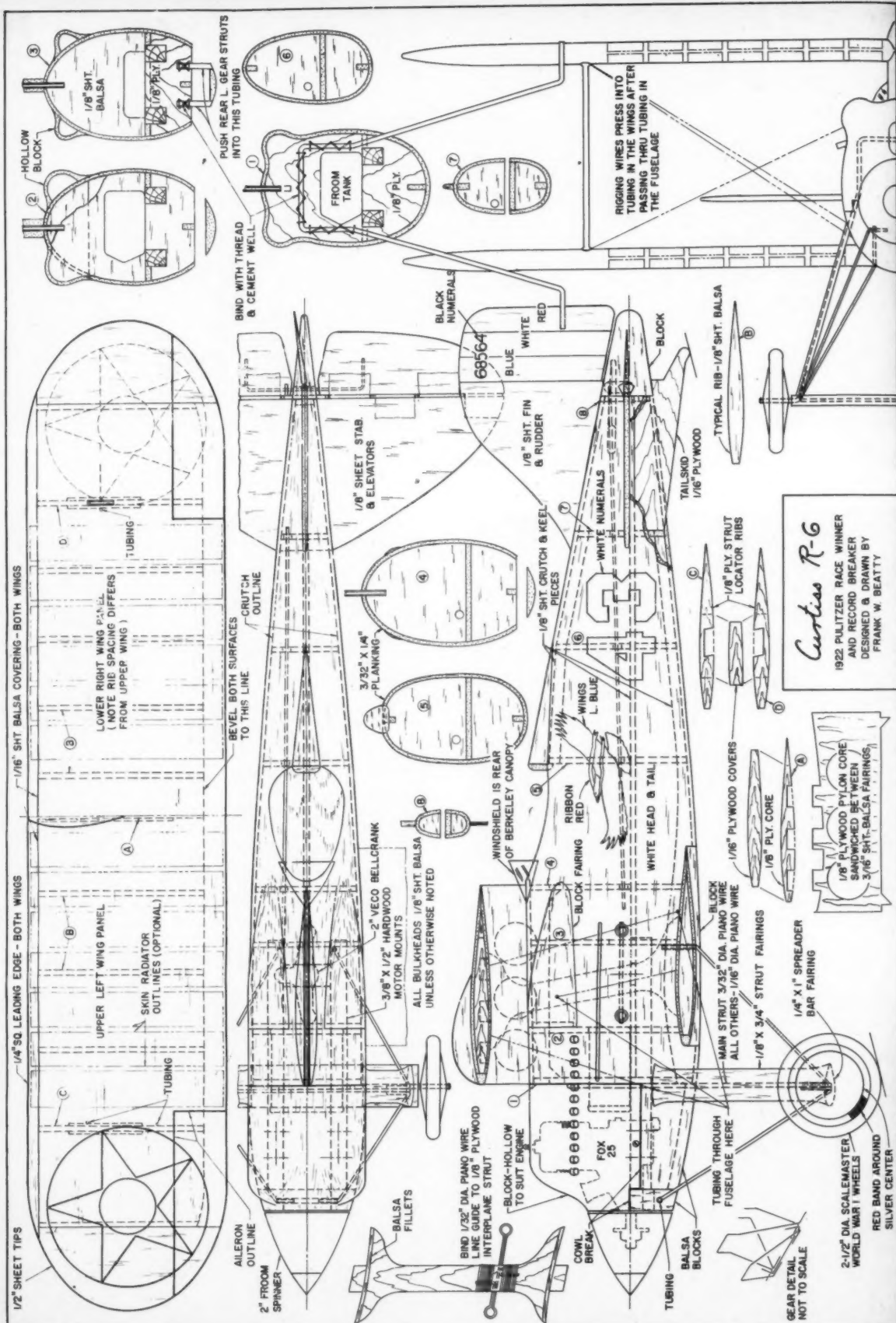


8. Lay cheesecloth over mold, allow few inches all sides. Three layers at time. Stretch, form cloth to mold. Now see step 9.

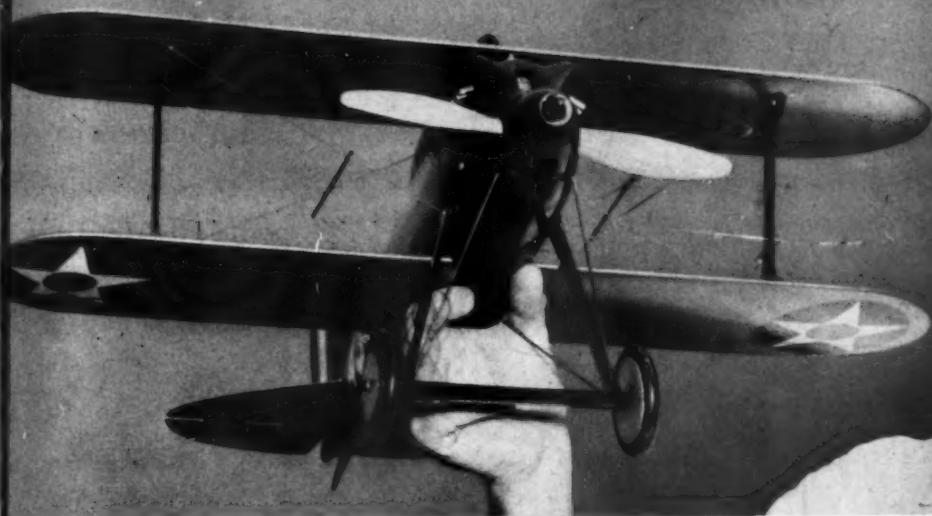
10. Replace part over mold. When hard, more coats glue. Remove from mold, test fit; replace on mold, trim. Dope on tissue.



FULL SIZE PLANS AVAILABLE. SEE PAGE 56.



Curtiss R-6
1922 PULITZER RACE WINNER
AND RECORD BREAKER
DESIGNED & DRAWN BY
FRANK W. BEATTY



Well pleased with his historic masterpiece in 1 1/4 inch scale, author believes in patient finishing. He tells you how he did it.

Curtiss R-6 Racer

by FRANK W. BEATTY

► The history of aviation has been a short but wildly exciting one. It's half century of existence has brimmed over with new exploits, new records and new plane concepts. In the early days of aviation, races sponsored by wealthy, far-seeing enthusiasts nudged man's first fumbling efforts into a headlong rush of progress. It was while reading the book "American Racing Planes and Historic Air Races," a beautifully illustrated thrilling history of these early races, by Reed Kinert, that I first became interested in the Curtiss R-6 Pulitzer Racer. About this same time, I saw an old newsreel of the 1922 Pulitzer Races. That did it. To see this plane in action is to build a replica of it.

The model featured has been built to a scale of 1 1/4 inches equals 1 foot, has a 23 3/4 inch wingspan, 215 sq. inches of wing area, and weighs about 26 ounces. This



A beautiful flying model of the ship that dominated Pulitzer Trophy races in the early twenties. Good for .15 to .25.

scale has produced a model which is large enough to fully cowl in the .19 size engines and yet it is small enough to be flown by the peppier .15 engines such as the K & B .15. My own Fox .25 powered Curtiss is a very spirited model which tears off the ground and through the air in a manner strikingly reminiscent of that old newsreel. This version of the model balanced at about 1 1/2 in. aft of the upper wing leading edge without the use of ballast. Those fliers who choose to build a slower model by using the lighter .15 size engines may find it necessary to add ballast to their model's nose.

We'll start construction by building the wings first. Note that though both wings are the same size and shape, the rib spacings in each are different. Sandwich the 1/2 in. plywood ribs A, C and D between their 1/16 in. plywood covers. The remaining 18 ribs can be cut from 1/2 in. sheet balsa. Cut the four wing skins from 1/16 in. sheet balsa, bevel the trailing

(Continued on next page)

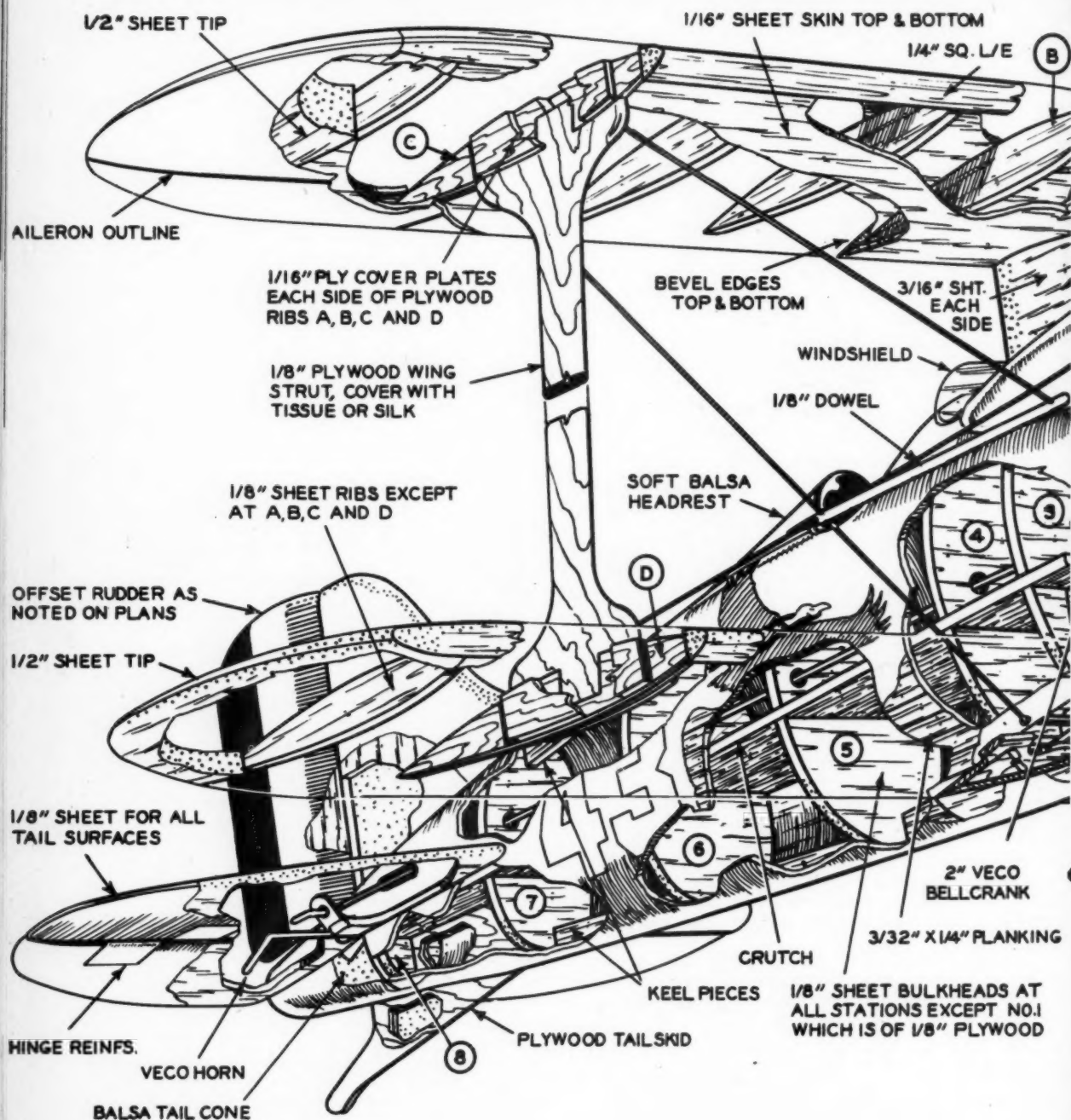
Pylon center section strut, and I-interplane struts, simplify a modeler's job. Those wheels are scale—a product of Scalemaster.



Sitting high on its stilty landing gear, the two-foot model has a blazing take-off. On a .25 it is a spirited model—watch out!



With the help of a superb Doug Rolfe cutaway,

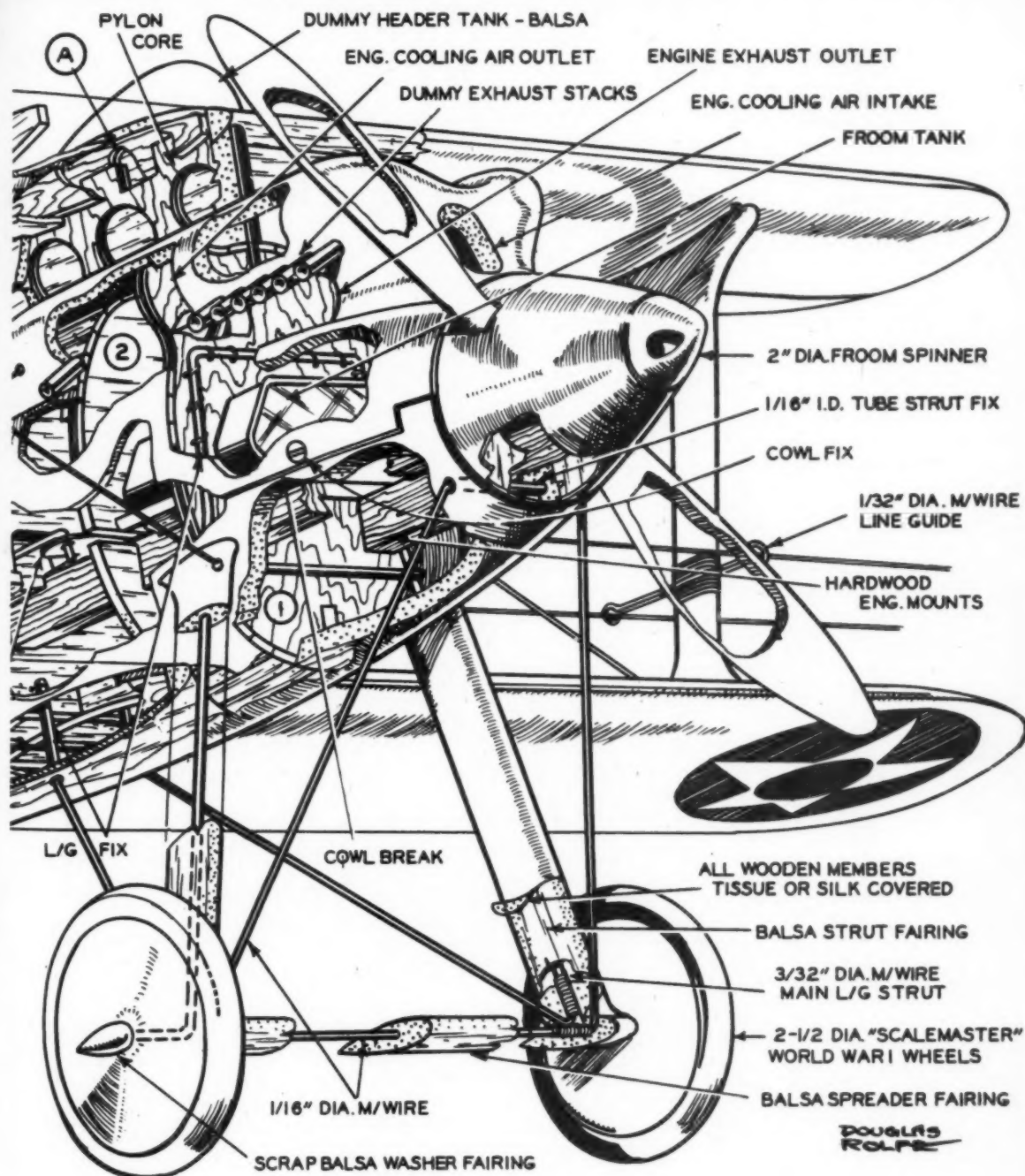


edge of each, and mark off the rib positions inside the bottom skin of the upper wing and inside the top skin of the lower wing. Make the pylon and strut end cut-outs in these two skins and then cement the ribs in place. The rigging wire reinforcements can be added now. They are 5/16 in. lengths of 1/16 in. dia. aluminum tubing cemented flush with the skin surfaces. Finish these structures by installing the 1/4 in. sq. balsa leading edges, the remaining wing skins, and the 1/2 in. thick balsa tips in that order. Sand both wings to shape and dope tissue or silk covering over each. Cement the balsa header to the upper wing and then set these units aside.

The fuselage cannot be completed without parts of the tail so we shall build them now. Saw the fin, rudder, stabilizer and elevators out of 1/8 in. sheet balsa and sand to shape. Groove the elevators and cement the control horn flush with the bottom. Cement the tubing for the hinges in place and dope silk around each for strength. Dope silk or tissue over each part and then cement the fin to the stabilizer centerline before setting these units aside.

We now can start the fuselage assembly. Saw bulkhead #1 from 1/8 in. plywood and bind the 3/32 in. dia. music wire main landing gear strut to it. Pin the 1/4 in. sheet-

a hard-to-build airplane looks a lot simpler.

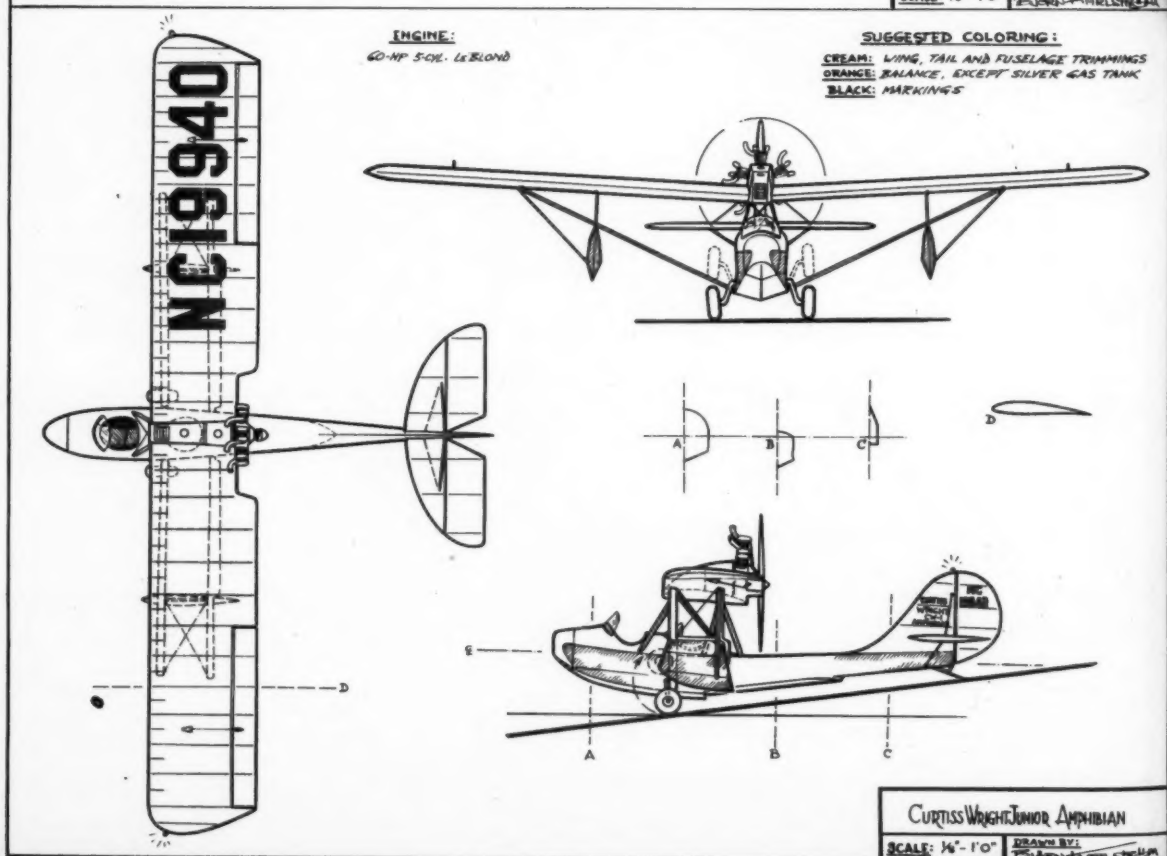
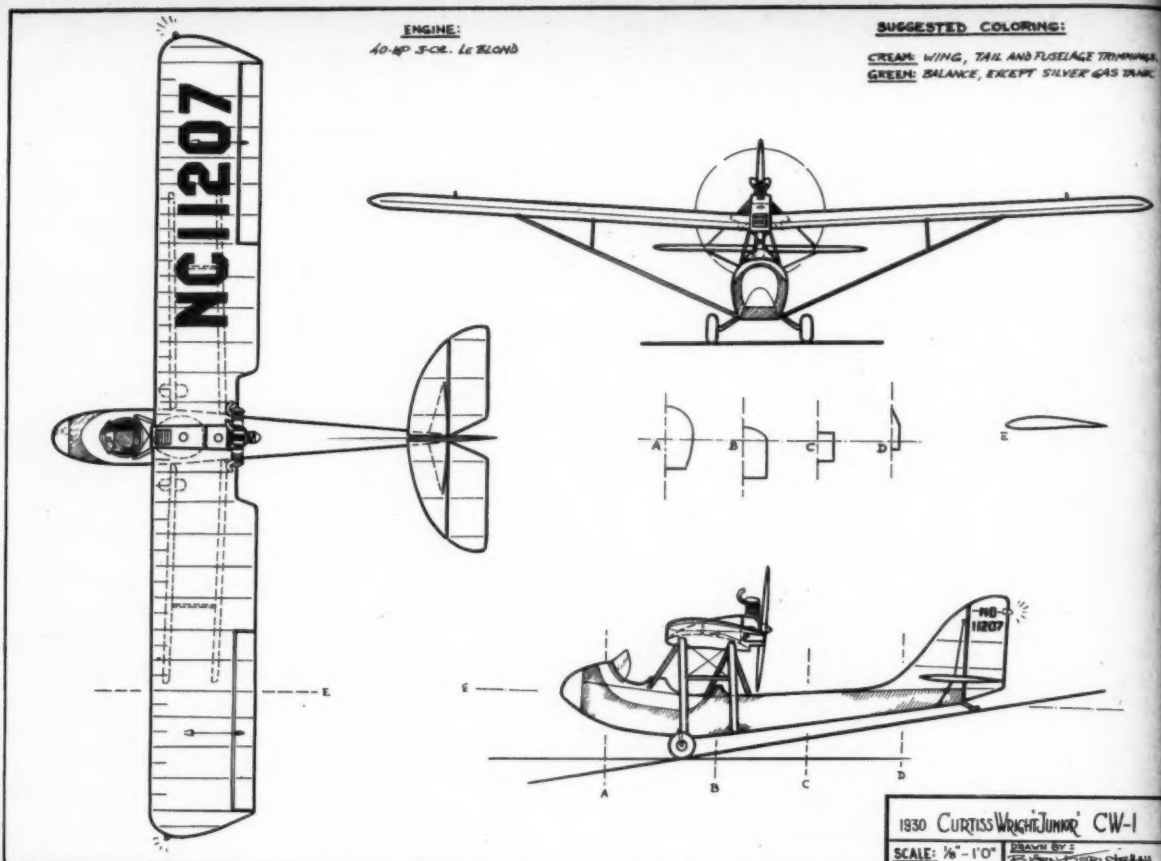


balsa crutch and $\frac{1}{8}$ x $\frac{1}{8}$ in. hardwood motor mounts to your workboard. These should project far enough out over the edge of the workboard to allow #1 bulkhead to be cemented in place now. The $\frac{1}{8}$ in. dia. brass tubing landing gear rear brace wire reinforcements should be bound to the lower half of bulkhead #3 and then it and the other lower bulkhead halves should be cemented to the crutch. Follow this with the $\frac{1}{8}$ in. balsa keel and $\frac{1}{16}$ in. plywood tailskid. When dry, pick this assembly up and cement the upper bulkhead halves, the $\frac{1}{8}$ in. plywood pylon, and $\frac{1}{8}$ in. balsa keel in place. Add fuel tank, bellcrank and leadouts, fin-stabilizer assembly, and elevators.

It would be well to point out at this time that if the push-rod is installed in the bellcrank and control horn as shown on the drawings, that a very quick elevator movement will result from a very small control handle movement. Since the model is quite fast, and the elevators are largish, this will result in a model which will respond very quickly to small control-handle movements. The less experienced flier may prefer to dampen this elevator movement and should relocate the pushrod accordingly.

Continuing on the fuselage, the $\frac{3}{32}$ x $\frac{1}{8}$ in. balsa planking comes next, (Continued on page 61)

Planes Worth Modeling — CURTISS WRIGHT JUNIOR





Well pleased with his brainchild, the author-designer shows off the finished receiver. The filament drain is less than 100 mg.

by ROBERT H. JERNBERG

For real gone RC addicts, a minimum sized, minimum weight, tone receiver that proved its reliability when built by many people.

1/2 tone

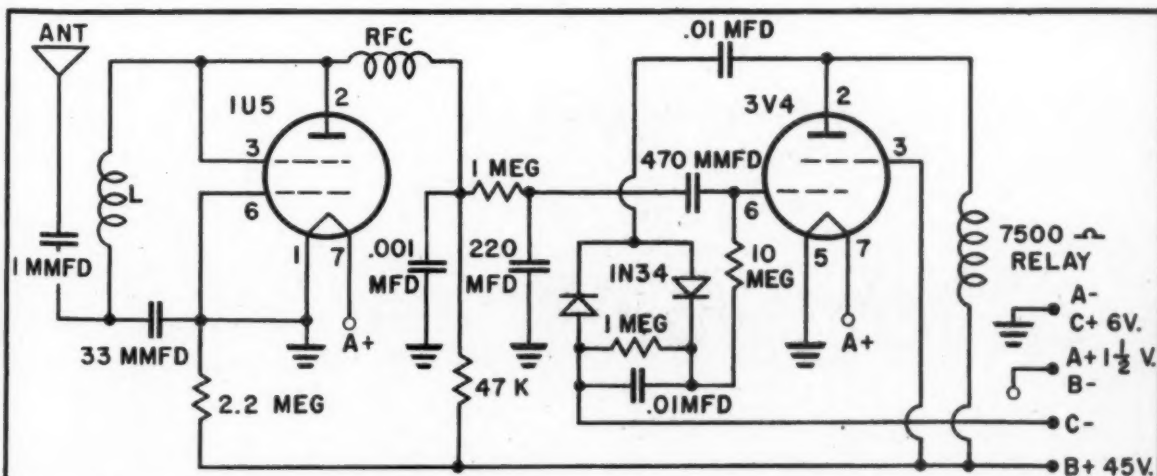
► Maximum reliability with minimum weight will always be the goal of any radio equipment designed for the control of models. The purpose of this article is to describe such a design, which we believe achieves this goal.

Design parameters to meet the above were as follows: filament drain must be 100 ma. or less, B supply drain must not exceed .5 ma., plate current change must be sufficient to operate a subminiature, light weight relay reliably. In addition to this, physical size must be small enough to fit even into Half A models. Also, the use of standard components would be an added advantage.

In order to have reliability with simplicity, it was decided to use audio tone. It is much easier to design a super regenerative detector whose only job is to detect and amplify a tone modulated signal, than it is to design one whose plate current change must operate a relay. No critical adjustments are required and antenna loading is not very fussy.

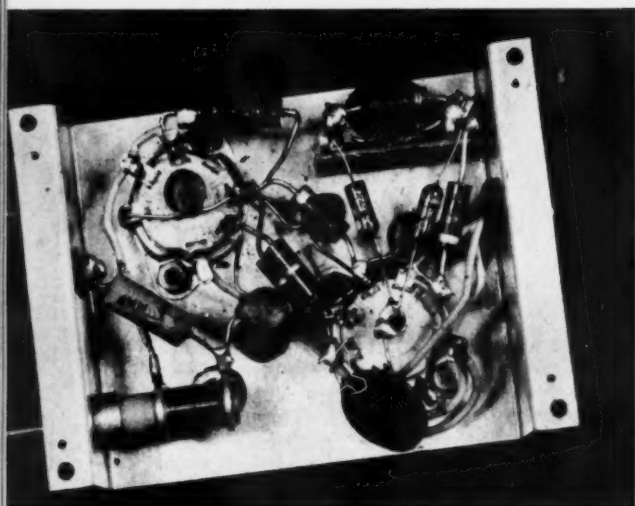
This receiver will operate on most any 100% modulated tone signal. Transmitters of the Wag, Badaco, and Ace type are very satisfactory. The set itself weighs about 2½ ounces with C battery. For B supply, we have been using subminiature hearing aids which weigh about an ounce, and two pen cells for A, which weigh another ounce. Total for the receiver, B and A weighs 4½ ounces, which is very hard to beat in any set, to say nothing of tone jobs. Our ships have total radio complements of nine ounces complete, including escapement batteries, switch, plug, wiring etc.

As can be seen in the schematic, the detector used in this circuit is the same as used in the Wag receiver. This simple detector, with few parts, (*Continued on next page*)



L = 36 TURNS OF NO. 32 ENAMELED WIRE CLOSE WOUND ON $\frac{1}{4}$ " DIA. FORM
CTC TYPE LSM WITH RED DOT IRON CORE
WIND CLOSE TO OPEN END OF FORM. DESIGNED BY: R. JER

DESIGNED BY: R. JERNBERG
DRAWN BY: H. A. THOMASIAN



Underside of the completed chassis. Compare this picture with the drawings before you start to solder. B drain less than .5 ma.

½ Tone —continued

put out about ¼ volt of audio tone. In order to get the filament drain to 100 ma. or less, and to make a more compact and lighter receiver, it was decided to make the trigger tube perform two functions. First, it must be a voltage amplifier to raise the amplitude of the ¼ volt tone, from the detector, to a sufficient amount, so that when it is rectified by the diode circuit, it will have adequate voltage to overcome the six volt bias on the trigger tube. Due to the 10 meg grid resistor, which effectively isolates the a.c. components of the feedback tone signal from the grid of the trigger tube, this trigger tube, as a voltage amplifier, has a gain of approximately 25 times. You will note from the schematic that the 3V4 is wired up as a pentode so it will have greater gain as a voltage amplifier.

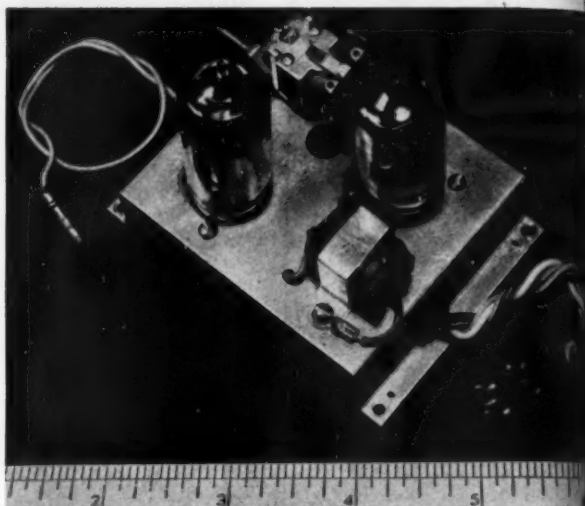
As can be seen from the drawings and pictures, there is nothing difficult to wiring up the set. Ground the components at the locations shown. If the tube socket is of a type that cannot be soldered to, then solder the lead to the screw or rivet holding the socket in place.

When installing the relay, isolate it from the chassis with a rubber grommet or insulating washers. This is to prevent the set from motorboating, and is very important.

The only item requiring any special attention is the six volt C bias battery. If weight is not a problem, then any six volt supply can be used, but inasmuch as there is no current drain on it, we prefer to use the small one shown. The longevity of this battery is determined by its shelf life so one ought to last a year or so of flying.

Two ways of making this battery up are as follows: Buy an RCA transistor battery No. VSO-87. This comes in unit cells construction for a total of 21 volts. Cut off four cells for six volts and solder the leads to it as shown. Then bind it with plastic electrician's tape.

The other method is a little tricky and required a little caution and skill. In this method, we buy a 15 volt sub-miniature hearing aid battery such as an RCA No. 504 and strip off *all* the covering and the end contacts. We then count off five cells and slice thru. The extra cell is in case of mistakes, so keep slicing off carbon till you have four cells with a metal plate at each end. Now clean the plates on each end *thoroughly*. Then solder leads to them. Be very careful in soldering so as not to apply excessive heat, because the bond between the plate and carbon may be broken. We suggest using solder paste on the plate, and using a small iron.



Good current change makes lightweight relay reliable. Install relay with rubber grommet to prevent motorboating—it's important.

After this operation, bind the cell tightly lengthwise to keep compression on the ends. Make sure to determine polarity with a meter before installing it on the set. Examination of the photograph will reveal that C positive is grounded at the screw which secures the C battery clamp. The same screw is also used to hold the tie point in place.

Those portions of the tuned circuit, as denoted by dotted lines on the pictorial drawing, should be kept at least ¼" away from other components. This is important.

Use an insulated post to attach the antenna post to the chassis. The antenna length is 24" although this figure is not very critical.

Hook up the set, observing the polarities shown on the schematic, and install a 0-5 ma. meter in the B plus line. Turn the switch on and check the idle at .25 to .35 ma. If the set idles considerably higher, disconnect it and check the C battery voltage. If this is above five volts then the set has been wired incorrectly so go back over the wiring to find the difficulty.

When the transmitter is turned on, there will be a slight drop in idling current. Also the meter will indicate a more stable reading. With tone on, tune the receiver for maximum deflection of the meter needle, which should indicate a plate current rise to 3.5-4 ma.

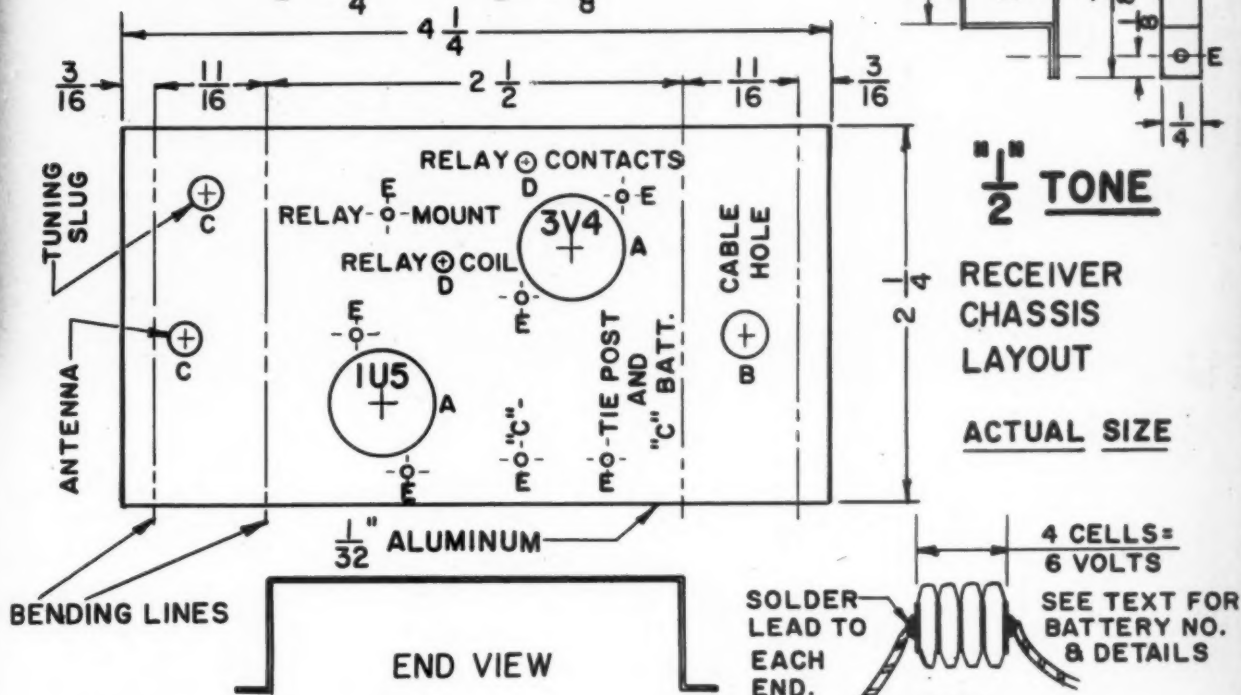
After having tuned the receiver, turn the transmitter off and make the following test. With the receiver turned on, grasp the antenna with your hand; this should not cause the relay to kick over. Now tap the antenna lead-thru post at the receiver with a screw driver, being careful not to touch the screw driver to anything but the antenna lead-thru. This also should not cause the relay to kick over. If it does, substitute a 2.4 or 2.7 meg resistor for the 2.2 meg resistor. Do not carry this any further than necessary or it will reduce the sensitivity of the receiver. On the other hand, if the receiver is insensitive (lack of range) then substitute a 1.6 or 1.8 meg resistor for the 2.2 meg resistor.

This is about the lightest, most economical and simple tone receiver we have seen. It will operate down to 40 volts on the B and 1.2 volts on the A supply with no trouble. After preliminary tuning no other adjustments should be necessary and you will be rewarded with hours of trouble free flying.

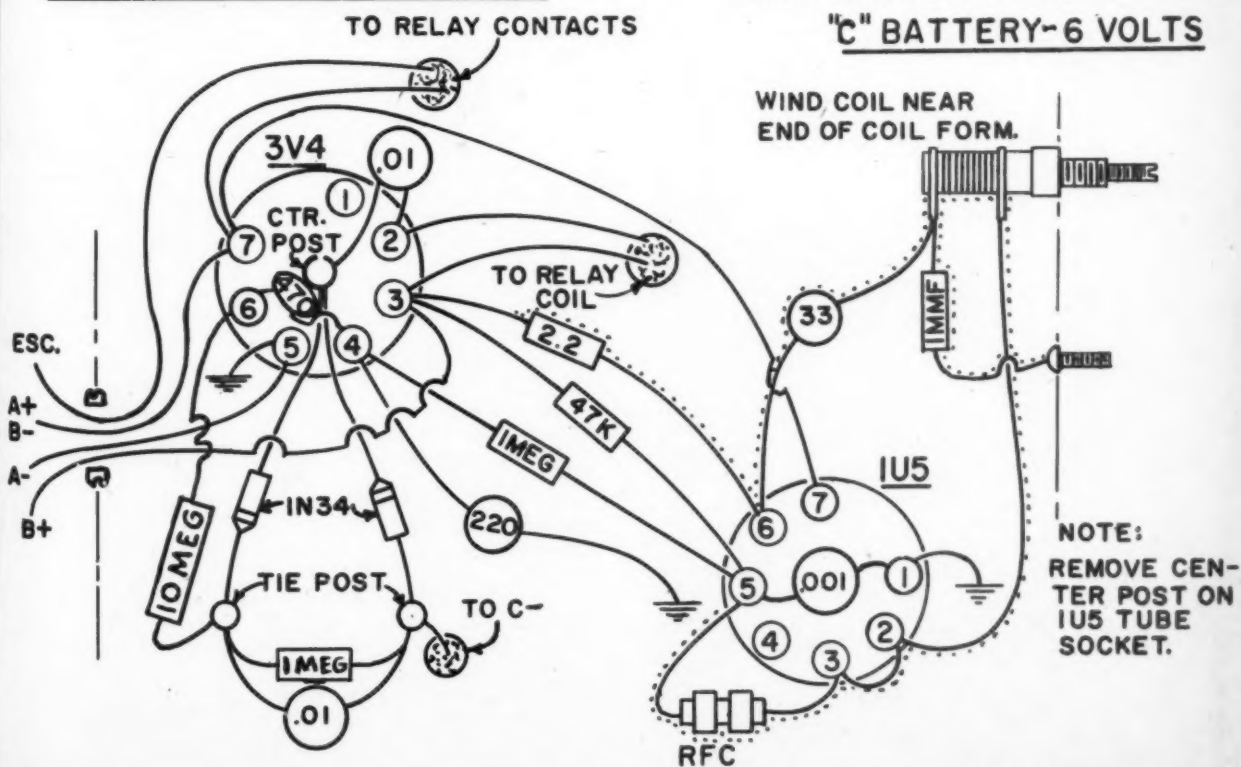
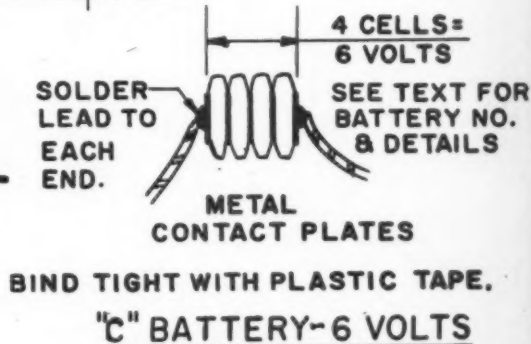
The author wishes to thank Harvey A. Thomasian of Worcester, Mass. and Harold F. deBolt of Buffalo, N. Y., for their help during development and field checks.

(Continued on page 63)

HOLES MARKED "A" = $\frac{5}{8}$ DIA. "C" = $\frac{3}{16}$ DIA. "E" = $\frac{1}{16}$ DIA.
 "B" = $\frac{1}{4}$ "D" = $\frac{1}{8}$



SOLDER .01 MF. AND 10 OHM SPARK SUPPRESSOR ACROSS RELAY COIL.





the PUSS MOTH

by STEPHEN A. LAMBERT

This contest-winning .049 scale model was built from DH factory plans of the Heart's Content, Capt. Mollison's famed monoplane.

► In 1954, at the fifth annual free flight meet, held in Winston-Salem, N. C., David Carroll, Carl Duncan, Tom Purcell (of ducted-fan fame), and I contrived to show "the powers that be" of this fine contest that Half A Flying Scale should be included in this meet, and in order to further our point took six or seven models along to prove that scale models would fly and fly well. Shortly

after the meet, word came that Half A Flying Scale would be included in the 1955 meet.

This model was designed to win that meet, which it eventually did in 1956. The original model flown in 1955 was a complete flop, because it was built strictly to scale and weighed in at about 12 or 13 ounces. It was not pre-flighted until the day of the meet. However, the second model, which is the one shown in this article, proved itself with flying colors. On a 30-second engine run, the model did 1:09 sec. in very windy weather, and scored 92 scale points out of a possible 100. It will ROG just like the full-sized aircraft, and turn in flights of thrilling performance, climbing in large left circles under power and descending in large right circles in the glide.

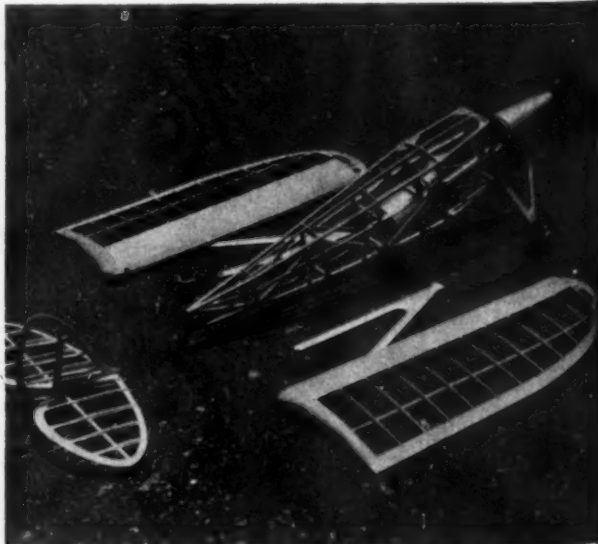
Factory drawings were supplied by the DeHavilland Aircraft Company, Ltd., and the builder may rest assured our drawings are as accurate as humanly possible. The drawings also have been double-checked by the enlarging process.

Construction is strictly conventional except for several small details, and an explanation follows:

Being a shoulder-wing (Continued on page 50)



Cowling removed to show installation of .049 Atwood Cadet engine. Graceful sweptback wings, stylish tail outlines, add to interest.



Simple, robust construction is mark of a good designer. The "can" in the fuselage is scale tank as used on the transatlantic hopper.

WING LETTERS (BLACK)
3/16" X 5/8" SHEET CUT TO SHAPE

25

Radio Control News

by EDWARD J. LORENZ



Trucks and traffic lights on 27 becoming a fast growing menace. Cheer up, have fun. Worse things you know. You could be a manufacturer. Oil



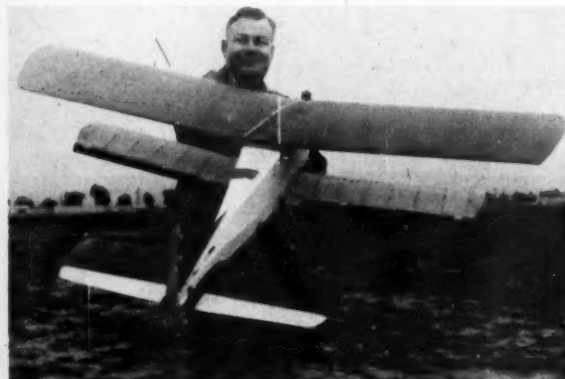
Taxiling at low speed out to take-off point is the new Berkeley Waco. A steerable tail wheel makes for easy ground handling. Pretty lines, fine performance make Waco good scale subject.

► The next time you suspect interference, don't necessarily blame it on your fellow flier or anyone in the immediate vicinity. The year 1957 will be marked by quite a bit of radio interference, of all kinds and on all frequencies. This interference is caused by sunspots, which are believed to be gigantic gaseous explosions on the sun. Though 93,000,000 miles away, charged particles from these explosions can affect radio reception. This interference condition will continue through the summer months, often in an unpredictable manner. Reports have come, and we have noticed instances, where a single subminiature hard tube detector pulls in an excellent signal from half way across the country. We have pulled in Mexican 'ham' signals with our receiver in upstate New York. Most interference will be noted on 27mc, due to the large number of users of that frequency. However, other frequencies can pick up spurious signals, from sources other than your own transmitter.

While on the subject of frequencies, we'd like to mention a list of frequencies which was made up by several of the west coast groups. These are grouped around our spot frequency of 27.255mc and have a band spread of from .10mc to 1.7mc. The users include industrial, government, amateur, aeronautical, maritime and broadcast assignees. Industrial users are on 25.01/25.33

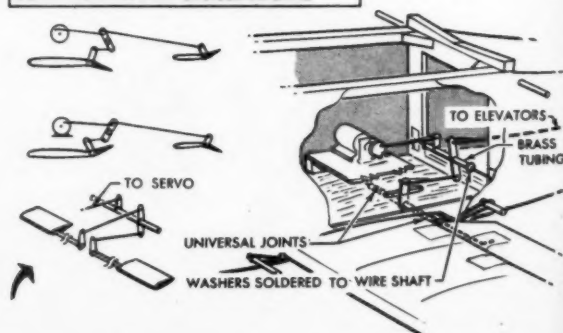
and 27.30/28.00 and include diathermy and heat sealing uses. These units often emit spurious signals of a fairly high-power level. Flying in the vicinity of a hospital or industrial user of these frequencies could, and has been, a proved source of interference.

We might as well finish out this discussion on transmitting equipment by again mentioning that high power is not essential for long range and reliability. This, of course, means within the limits of model flying, the range generally being well within 2,500 feet. If 100 watts of power will reach the moon and bounce back to earth, why do we need 5 watts, or 1/20 of this power, to reach out but 2,500 feet? The truth is, that the average RC flier assumes he needs high power, when actually proper tuning of the receiver and transmitter often remedies the problem. True, the receiver must be of a half way decent design and have good sensitivity. The majority of receivers fall into this class. If the range of a given signal level is to be doubled, the power output of the transmitter must be squared. This means that if you are obtaining a range of 1,000 feet with 2½ watts output, it will require 6¼ watts to reach 2,000 feet, with the same signal level. If three watts were used for 1,000-foot range, then nine watts would be required for 2000 feet. As you can see, this is not the right approach to solving the



Simple installation for ailerons—if you have a biplane and all those channels! John Murtha, LW Cruiser biplane—sketch, Frank Dazey.

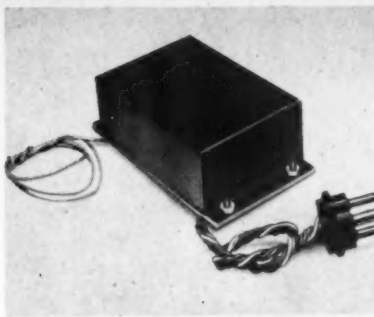
FLAP-ELEVATOR LINKAGE INSTALLATION ON JOHN MURTHA'S LW CRUISER BIPLANE



Murtha's torque rod linkage might easily be adapted to an aileron set-up. Requires two more channels in radio.



Ren Smith, Lynwood, Wash., raves about delta. Proportionate control. Front rudder steers.



CG's new RT-1 receiver, transistorized, less than 4 oz. with bats. A 100% modulated tone.



Small tone receivers seem to be a rage. This a Badaco. Like CG to the left, mounts easily.

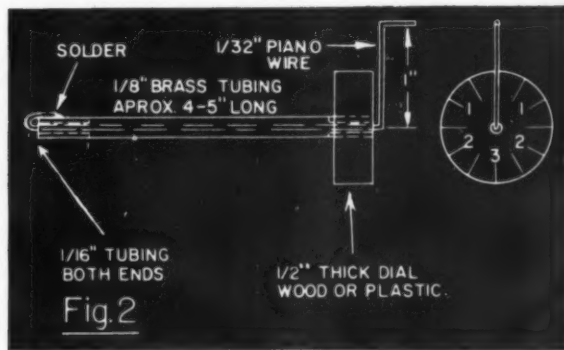
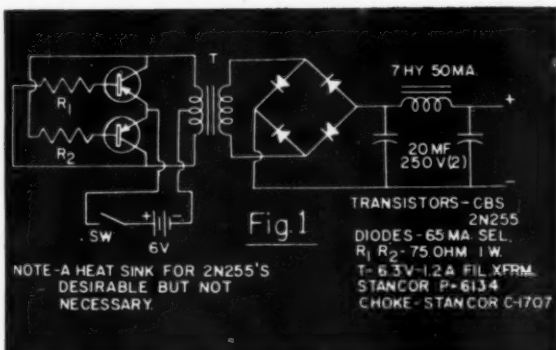
problem. One to two watts of output power are all that should ever be required to operate a radio-controlled plane or boat as is commonly done. One must have a sensitive receiver, and most of them on the market today are satisfactory. Tuning of the receiver to a properly tuned transmitter is a must. Follow the manufacturer's or designer's instructions. Make a distance check to at least 200 feet, on the ground. The original Aerotrol receiver and transmitter were ground checked at a distance in excess of 4,000 feet and at an air distance in excess of 8 miles, using a transmitter having a power input of less than three watts.

In order to stimulate a little thinking on transistor applications, Fig. 1 shows the 'Transverter' as sent in by Don Belanger, Belleville, Ill. This transistor power supply uses conventional parts, and readily obtainable transistors. A six volt 'hot-shot' battery will operate the supply

and the efficiency is about 40%. Since R_1 and R_2 determine the operating frequency, and also the collector current of the transistors, experimental work could be done to increase the frequency and hence reduce the value of the filter capacitors. Other rectifiers could be tried. Mr. Belanger is working on improvements on this unit. However, as it stands, it works fine, giving an output voltage of 110v DC at 20ma.

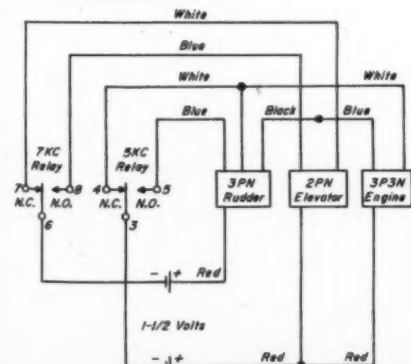
Those of you looking for new reed units might be interested in our findings on the 8-channel reed job from Germany, described in the April MAN. As mentioned, this unit covers the 280 to 400 CPS range, with a frequency spacing of about 15 CPS. Sensitivity is very good, with the reeds having good response and amplitude when operated from a transistorized receiver. The only weak point we found was the construction of the magnetic circuit and lack of a

(Continued on next page)



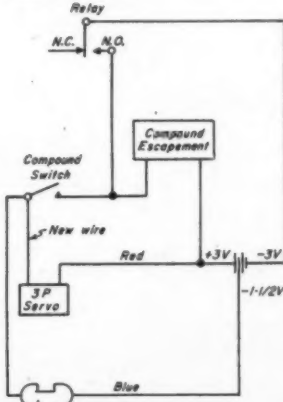
Servo tricks, below, include, left, use of multi-servos on 2-channel; on compound escapement, center and right. Note servo designation.

MULTI-SERVOS WITH 2 CHANNEL RECEIVERS FOR SIMULTANEOUS ACTION

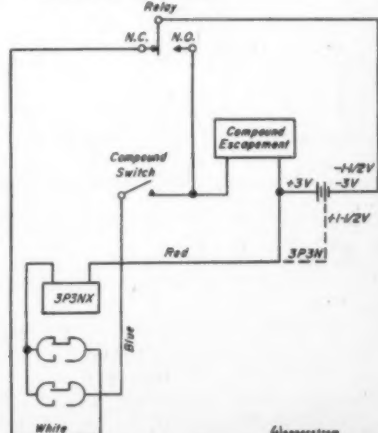


Notes:
1. Babcock BCR 7
relays and terminals
as labeled.
2. C-S dual channel

COMPOUND ESCAPEMENT OPERATED 3P MULTI-SERVO



COMPOUND ESCAPEMENT OPERATED 3P3NX + 3P3N MULTI-SERVOS



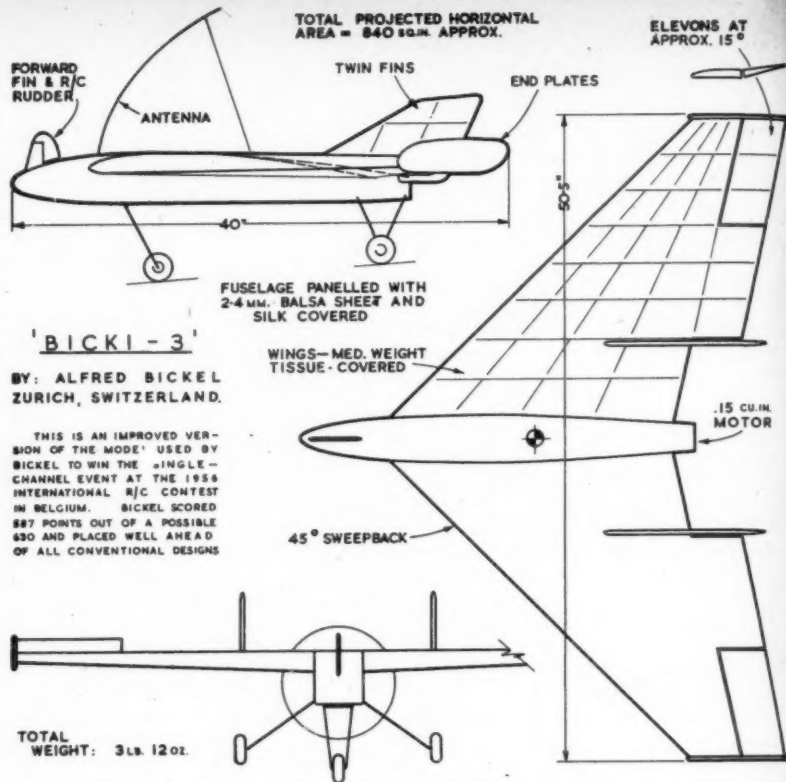
Glennstrom

R.C. NEWS—continued

suitable mounting bracket. For boat work, however, this should create no problems. The price is an amazing \$9.50, air fare prepaid, from Hans A. Pfeil, (23) Zeven-Aspe, Waldkrankenhau (Diabetic Research Center), WEST, Germany. We're sure you won't go wrong with one of these units.

One of the new German transmitters for 27.12mc uses two 6AK5's in the RF section and one in the audio section. A 13.56mc crystal is used in the first stage and the last stage employs a Pi-network, such as we gave in our MOPA article. Although we have no prices on this set, interested persons could write to Radio-Rim, Muchen, Bayerstrasse 25, AM Hauptbahnhof, Germany. The plans are very complete and include pictorial drawings. The unit is housed in a beautiful case, containing a meter and all other adjustment devices on the front panel. A regular 13.627mc crystal, as used in this country, will work in Rim-Boss I or Rim-Boss II transmitter. German RC design is equal to anything we've seen in this country or abroad.

Bill Effinger of Berkeley Models has passed on some information from Hivac, Ltd., makers of the XFG-1 tube. As most of you know by now, there have been reports of poor operation of gas tubes. The XFG-1 has been less at fault than our own RK-61 tube in many respects. The apparent cause for a lot of the trouble with gas tubes is the insulation resistance of the area where the pinch has been made on the wire leads. The XFG-1 tubes have a coating in this area which helps to prevent lowered resistance. However,



'BICKI-3'
BY: ALFRED BICKEL
ZURICH, SWITZERLAND.

THIS IS AN IMPROVED VERSION OF THE MODEL USED BY BICKEL TO WIN THE "ANGLE-CHANNEL" EVENT AT THE 1955 INTERNATIONAL R/C CONTEST IN BELGIUM. BICKEL SCORED 587 POINTS OUT OF A POSSIBLE 630 AND PLACED WELL AHEAD OF ALL CONVENTIONAL DESIGNS.

TOTAL WEIGHT: 3 lb. 12 oz.

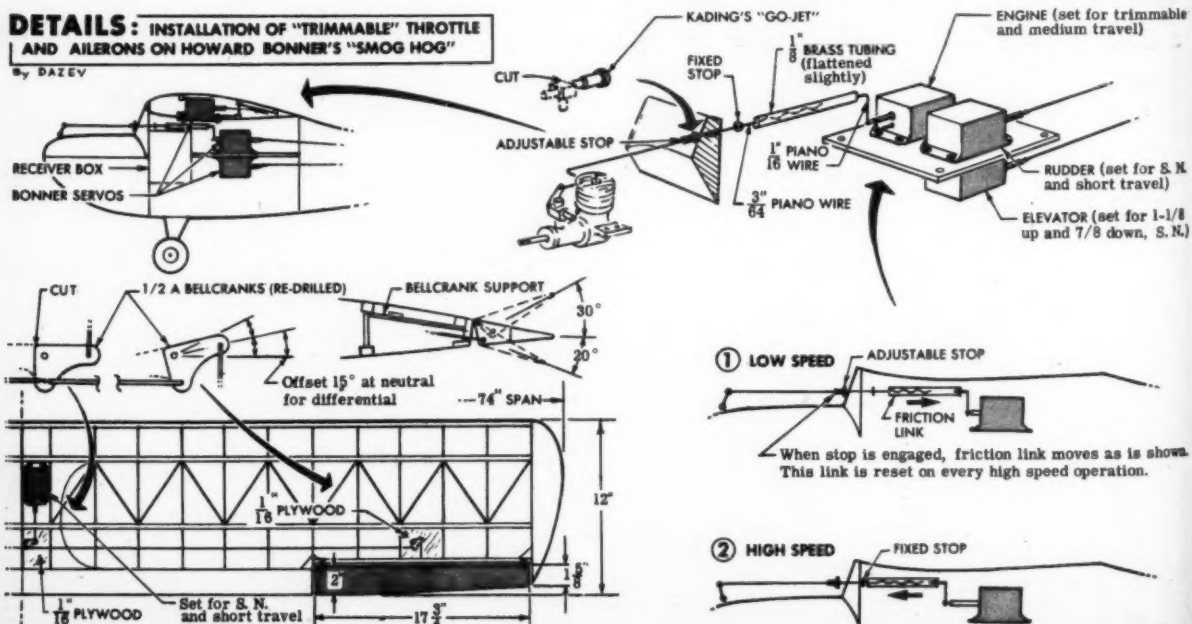
GENERAL ARRANGEMENT DRAWINGS BY P. F. F. CHINN. BASED ON DRAWINGS AND DATA SUPPLIED BY DESIGNER.

this area around the tube wire pinch should not be touched or contaminated. Perspiration contains oils and acids which are detrimental to electrical equipment and soldering fluxes leave residues which are harmful. Gas tubes are susceptible to lowered resistance of this lead seal, and this condition is often caused by excess moisture col-

lecting on hydroscopic particles. For best results, it is suggested that you do not place your fingers on the glass seal and that this area be kept perfectly clean. This can be done by cutting and shaping the leads, then washing the tube in a warm detergent solution, followed by a thorough water, rinse and (Continued on page 53)

DETAILS: INSTALLATION OF "TRIMMABLE" THROTTLE AND AILERONS ON HOWARD BONNER'S "SMOG HOG"

By DAZEY

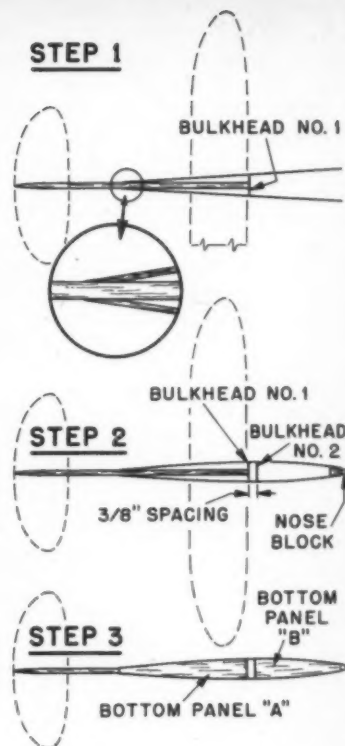


This aileron layout provides slow, smooth rolls which are not as spectacular as snap rolls, but which may earn more contest points. Elevators are used to maintain altitude during continuous rolls.

Purpose of set-up is to provide a very accurate adjustment for low speed RPM's (critical). Use of trimmable servo allows engine to be operated at full range.



Brent Hawkins, Morton, Ill., admires the ship of hand-launched glider which won him the first place at 1956 Nationals, Dallas, Texas. This quickie conversion



PAA Junior Jet

Have fun with this Jetex-powered payload model. How well does it fly? Here's young chap who won 1956 Nats with it. That's all!

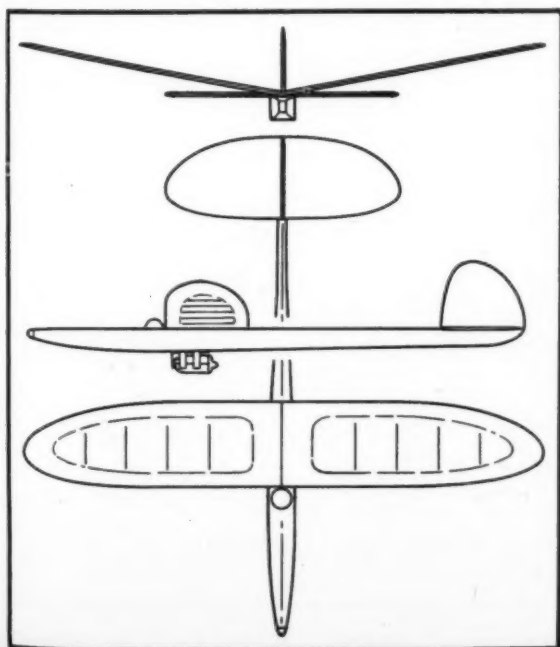
by BRENT HAWKINS

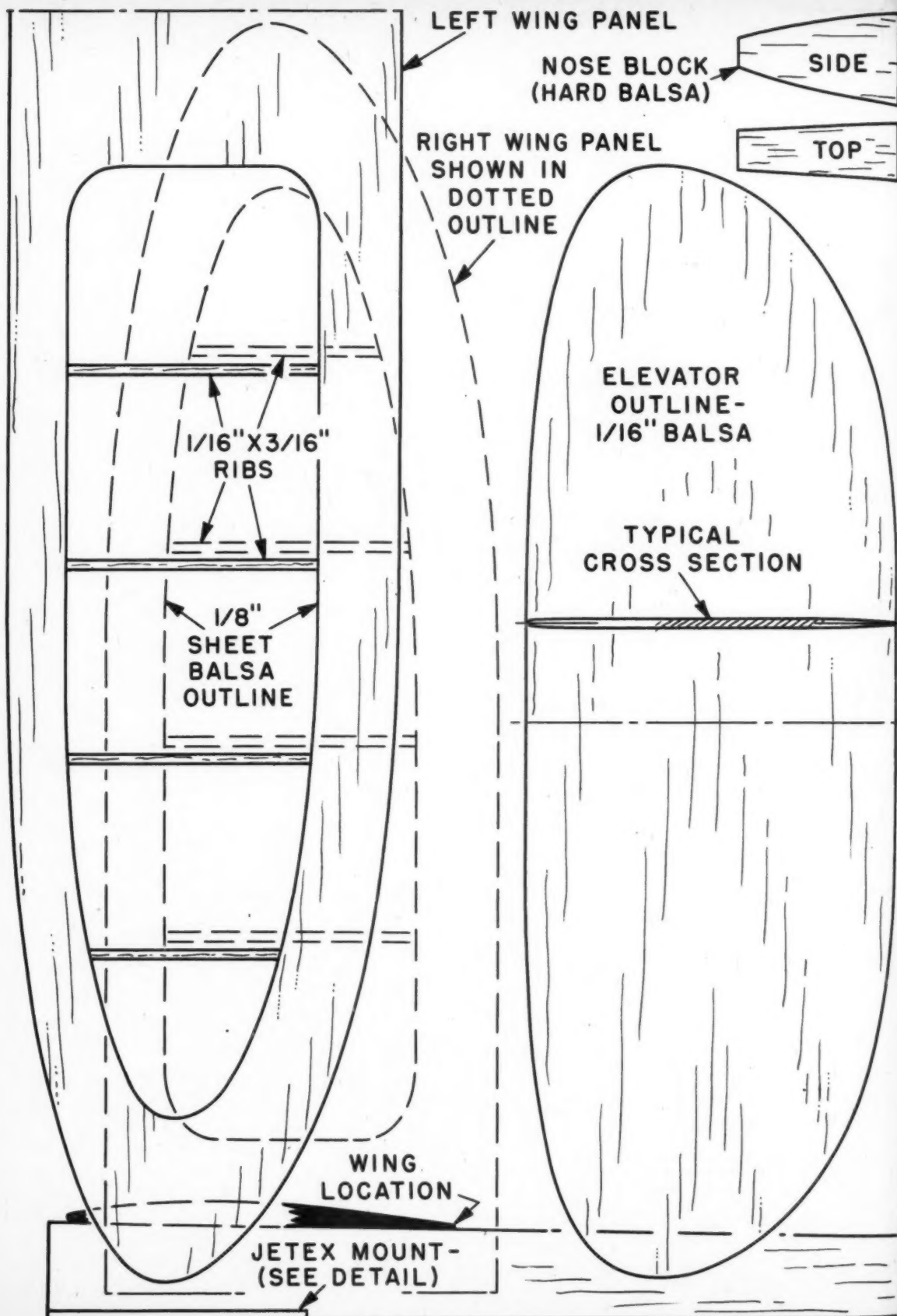
► This PAA Junior Jet model was completed between the hours of 10:00 P.M. Friday, July 27 and 9:30 A.M. Saturday, July 28 at the Dallas Nationals. Burning of the midnight oil was caused by a misunderstanding of the event listed as "PAA Junior Jet" as shown on the Nationals entry blanks. It was thought that this was the regular PAA Jet payload event, scheduled for Juniors only. So I built a 34" plane powered by a Jetex 150. The officials at the processing tables quickly pointed out the error and produced the Junior Jet rules (Available from George Gardner, Pan American World Airways, Bridge Plaza, Long Island City, N.Y.) which allow a maximum dimension of 24", powered by a Jetex 50 or 50B and a much smaller payload dummy.

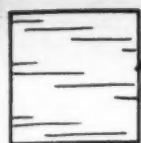
In an effort to find something for this event in my box of outdoor models. I discovered a hand-launched glider that had possibilities. Its wing span was less than 24" and it had a good glide although I never could throw it as high as I wanted. Maybe Jetex power was just what was needed! But first, a compartment for the payload dummy had to be added. The fuselage nose was cut off even with the leading edge of the wing. Sheet balsa sides, top and bottom were used to form a fuselage which could hold the payload dummy. Plywood 1/16" thick was installed in the bottom of the fuselage directly under the wing to provide a mounting base for the Jetex 50B. Sheet balsa on the top of the fuselage was left until last, so clay could be added if it was needed for balance purposes. Fortunately, the final weight and balance of the model came out correctly without the addition of any clay. A couple of test glides and the ship was ready for its first powered flight. I decided to make it an "official", so the plane was processed. It was launched in the same manner as a hand-launched glider, in a fairly steep right bank. Time on each of the five flights continued to increase until 1 minute 12 seconds, out-of-sight was achieved on the last flight.

(Continued on page 44)

PLANS ON NEXT TWO PAGES





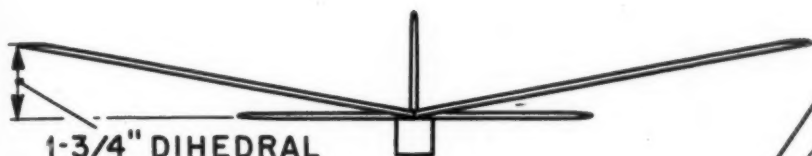


FUSELAGE BULKHEAD-
(2 REQUIRED) 1/16"
SHEET BALSA

"JETEX" MOUNT -
1/16" PLYWOOD



"JETEX" MOUNTING
SCREW LOCATIONS



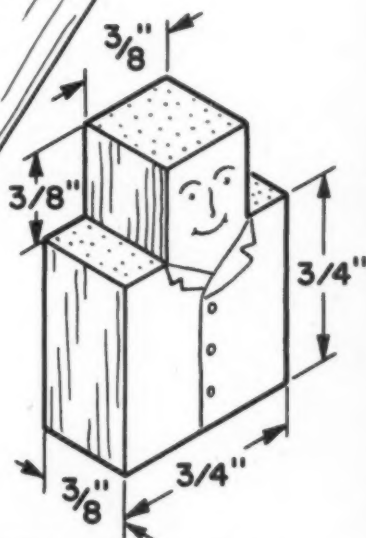
1-3/4" DIHEDRAL

1/4-SIZE FRONT VIEW

FUSELAGE SIDE - (2 REQ.)
1/16" BALSA

P.A.A. JUNIOR JET

WEIGHT, INCLUDING THE
PAYLOAD DUMMY AND
FUEL IN JETEX 50B -
1-5/8 OUNCES



PAYLOAD DUMMY -
(REQUIRED WEIGHT
IS 1/4 OUNCE)

RUDDER -
1/16" SHEET
BALSA

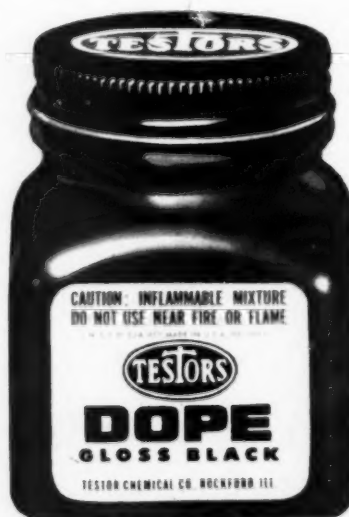
FUSELAGE BOOM -
(1/4" HARD BALSA)

PAA

USE THE Right DOPE...

TESTORS DOPE

Unequaled for finishing rubber-powered models, scale models, display models... is also an ideal lacquer for household applications such as touch-up work, painting toys, etc. Provides superior hiding and build-up, easy brushing or spraying, perfectly controlled shrinkage, high flexibility; dries to a tough, long-life film; colors are pure, sharp, brilliant for perfect realism, craftsman appearance. Available at dealers everywhere in handy 1-ounce bottles (15c size) and economy-size quarter-pint jars (50c). Insist on Testor's... *by name!*



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...OR THE Best RESULTS



The finest formulation ever developed for giving a *genuinely hot fuel proof finish* to engine-powered models. Completely withstands destructive elements in today's high-solency glo fuels. Applies easily by brush or spray; has good hiding power and build-up; dries to a tough, durable film; comes in a popular range of sharp, brilliant colors. Available at dealers everywhere in handy 1-ounce bottles (15c size) and economy-size quarter-pint jars (50c). Insist on Testor's . . . *by name!*



BUTYRATE DOPE

COANY, ROCKFORD, ILL.

LE'S STOCKHOLM 1, SWEDEN

Conrad Connrod



OH NO!



THAT'S THE THIRD ONE WE'VE LOST THIS MONTH ALONE!

YEAH



WHAT WE NEED WILMER IS A CAR - A CAR TO CHASE 'EM WITH....

YEAH, A CAR



NEXT DAY

USED

LOOK WHAT JUST WALKED IN



AND WHAT CAN I SHOW YOU TODAY?

WE WANT TO BUY A CAR



WE WANT A CAR TO CHASE MODELS IN - HOW ABOUT THAT ONE ...

TO CHASE MODELS! WHY AREN'T YOU A LITTLE YOUNG - ER THAT'S I MEAN....



IT LOOKS LIKE IT WOULD CLEAR THE STUMPS PRETTY GOOD - STUMPS!



- IT HASN'T GOT A TOP, WE CAN SEE 'EM WHEN THEY'RE 'WAY HIGH ...

GOOD HEAVENS!



YOU SEE - I'LL DRIVE, AND WILMER WILL KEEP THEM IN SIGHT ...

INCREDIBLE!



IS THIS CAR FAST ENOUGH TO KEEP THEM IN SIGHT?

WHAT HAVE THEY GOT - ROLLERSKATES?



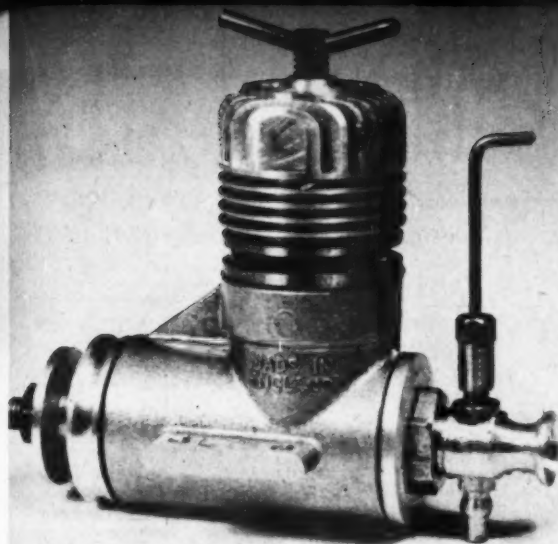
ARE YOU SURE IT'S FAST ENOUGH, SOME OF THEM MOVE RIGHT ALONG AND -

LISTEN WHAT THIS CAR WON'T CATCH, I WILL PERSONALLY RETRIEVE

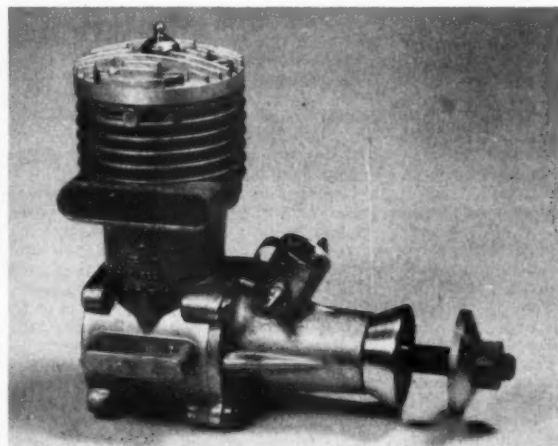


NEXT DAY

HERE -

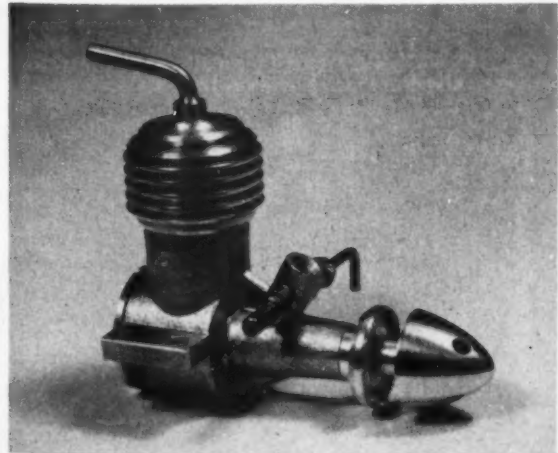


English Elf BR 1.8 of .112 displacement has reed valve, two ball bearings, and power! Your RC .09 enough? The .15 too much?

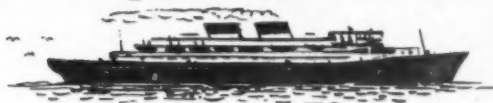


Italy's contribution to popular stunt combat class, is the new Super-Tigre G.21/35. Firm noted for Diesels, lately for glow.

From Norway, the magic craftsmanship of David-Andersen is again displayed in firm's new .06 Diesel. Engine may outlast builder.



Import Review



by P. G. F. CHINN

Like foreign cars, imported engines are a small percentage of U.S. production. And like foreign cars they embody many ideas.

► If, occasionally, you read the car magazines, you will see a lot about imported cars; about M.G.'s, Jaguars, Porches and the like. Enough, almost to make you think that Detroit must be feeling in the pinch. In actual fact, every time a new Jaguar rolls off a dealer's floor and onto the U.S. Highway, two hundred new Chevies join it.

American model aircraft engines outsell their imported rivals in like proportion. People buy foreign model engines for the same reasons that others buy foreign cars: because they occasionally like to try something different or because they want something of a specialized type which no American manufacturer finds it worthwhile, commercially, to produce.

As we said at the beginning of this short series, the average American model motor is a first rate job: well made, powerful, reliable and easy to handle, yet modestly priced and the American model engine industry is in no danger from imported products, most of which fall into categories outside the interest of domestic manufacturers.

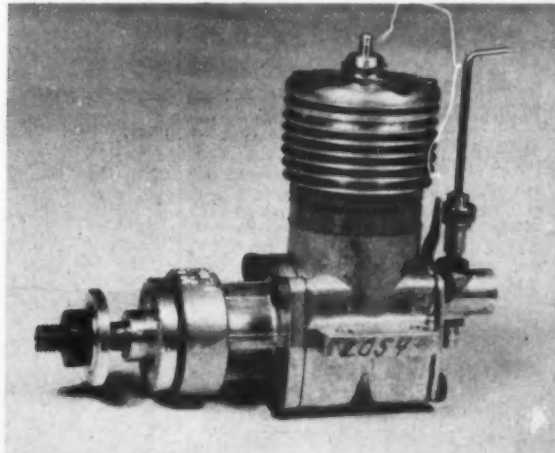
Our test selection of imports this month numbers both glowplug and Diesel, ranges from .06 to .35 and comes from four different countries: Norway, Britain, Germany and Italy. Taking them in order of displacement, we have first the:

David-Andersen .06 Diesel

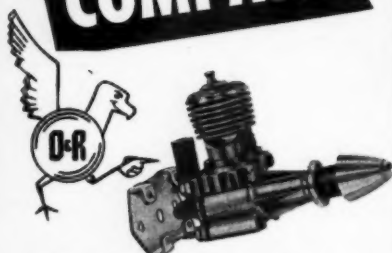
Here is an example of hand-built model engineering craftsmanship at its best. Designer-manufacturer Jan David-Andersen employs four men to make about 2,000 engines per year at his small Oslo factory. He says that he would have

(Continued on page 40)

Firm crankcases a hallmark of hotter engines. This is the West German glow model Mach 1—twin ball bearings, plastic rotor.



COMPARE



THE NEW O&R Mite ENGINE

with any other 1/2A engine on the market today! HOT? Here's the .049 that delivers pep and power a-plenty! O&R's exclusive focused jet stream porting does it! Ask your dealer!

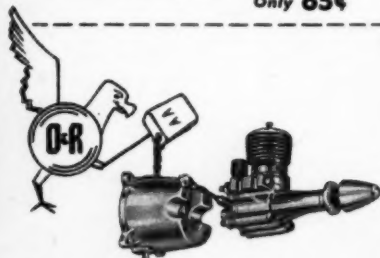
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P. G. F. CHINN

Great Britain

► One of the complaints heard from Britain—and elsewhere for that matter—is that not enough attention has been given, by engine manufacturers, to the requirements of RC enthusiasts. What is wanted, say the multi men, is a motor of 5 to 8 c.c. (.30–.49 cu. in.)—preferably spark ignition for its cleaner running at low speed—and fitted with a throttle control that works smoothly and consistently right down to idling speed.

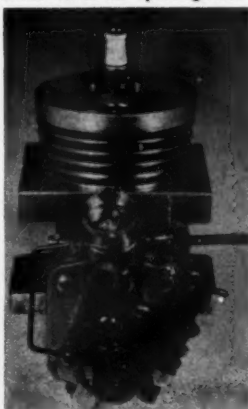
When, therefore, we had a request from E. D. designer Basil Miles to test out a prototype of just such an engine, our interest was immediately aroused. This new Miles Special proved to be a short stroke .345 cu. in. twin-ball-bearing motor, with rear drum-valve induction and a reverse-flow scavenged cylinder exhausting into twin stacks. Its most interesting feature from the RC enthusiasts point of view, however, is the coupled butterfly throttle control which is linked to the ignition timer. Retarding the ignition automatically closes the valve and a progressive speed control is, in fact, maintained down to a mere tick-over.

The Miles is essentially a custom built job and will not see large-scale production. It weighs 10.2 oz. and has a bore and stroke of .844 x .625 in.

Plastic Props

A couple of years ago, in this column, we published a warning against excessive rpm on plastic props. Plastic props are widely used in many countries outside the U.S. and, in response to our urging, International Model Aircraft Ltd., manufacturers of Frog model engines, props and kits, give these figures for Frog Nylon props as the maximum recommended safe speeds: 10 x 6: 13,000 rpm, 9 x 6: 14,000, 8 in. dia. (all pitches): 15,000, 6 in. (all pitches): 18,000, 5 in. (all pitches): 20,000. It is pointed out that safe speeds for high-impact polystyrene props are about 10% below these figures. It should always be remembered that, while plastic props may be safe at higher speeds, centrifugal force is not the only cause of failure. Heat, due to excessive crankshaft temperature or to vibration, may lower the potential safe operating-rpm and so we make no excuses

British Miles .35 spark-ignition motor for RC has coupled throttle and timer (spark) movement.



FOREIGN NOTES

A monthly world-wide round-up of technical developments, designs, significant industrial products.

for repeating an earlier safety rule: Always stand behind the motor when the prop is turning, no matter whether it is plastic or wood.

West Germany

New RC items continue to appear in Germany at a phenomenal rate and something fresh appears on the market practically every month.

From the prolific Johannes Graupner organization, a number of new products have appeared for the 1957 season, among them a new 27 mc. transistor receiver. Designed for operation on a 30-volts B supply, it features a single DL68 tube and one Phillips OC. 76 transistor. Unlike earlier Graupner receivers, the complete unit, including relay, is housed in a Plexiglas case, measuring 2.8 x 1.6 x 1 in. and weighs under 3 oz.

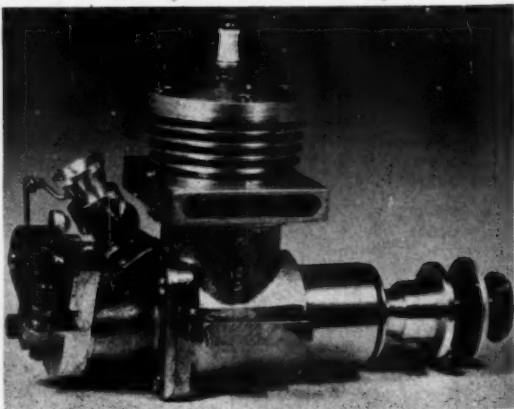
Another new Graupner item is "Tele-matic-Alpha," a self-contained rudder servo for operation on 6 volts. It gives selective left and right, is self-neutralizing and has a linkage for direct coupling to rudder line or a push-pull rod. The complete servo is in a metal case measuring 2.6 x 1.5 x 1.2 in., weighs 2½ oz. and is claimed to draw only 70 ma. for a pull of approx. 1 oz. in.

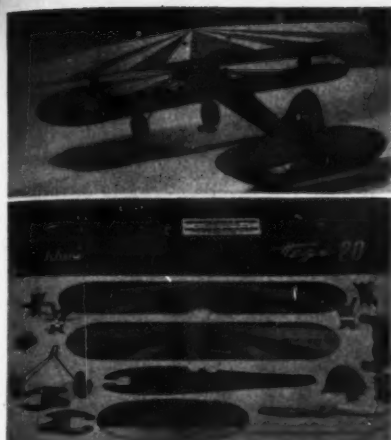
Also from Graupner is a new addition to the Taifun engine range. This is the Hobby RS Diesel, with reed-valve induction via a vertical rear intake.

Japan

RC boats with a difference is the specialty of Mr. Husaichi Ehara of Tokyo. Mr. Ehara is an iron merchant, but one, happily, with a wife and staff able to run his business for him while he spends his days testing his boats on Tokyo Bay, or the Yamanaka and Sagami Lakes. As befits an iron merchant, Mr. Ehara makes his boats entirely of metal—mostly tinned steel—and he has built about ten of them in the past three years.

Typical of these is his Enya-60 powered 36-in. express cruiser. This boat is said to hit speeds as high as 22 knots and weighs 25 lb. The big Enya glow motor is installed under the cockpit floor and is blower cooled by a centrifugal fan attached to the flywheel. The radio receiver is a Japanese 27 mc. Super-Teletrol single-





In Jim Walker tradition, German uke trainer by Schuco, bolts and clips together, Webra motor.

tube set hooked up to three servo motors actuating rudder, engine speed and fuel cut-off. A new Ehara project is now under way, consisting of an aluminum hull in which it is hoped to fit a special 1.2 cu. in. twin-cylinder water-cooled version of the Enya-60.

Monaco

Now added to the FAI contest calendar as one of the recognized annual International events, is the Monagasque Hydro Model Contest which, this year, is held for the fifth time. Organized by the Aero Club de Monaco, the meet, which is now the first FAI event of the year, is divided into two classes, gas and rubber. The event, which, thus far, has seldom attracted more than four or five competing countries, has the reputation of being one of the most enjoyable of all model contests.

Italy

Every so often, someone comes up with a real giant of a model. The biggest we remember was seen several years ago at an English meet: it was a 24 ft. span towliner with a 24 in. chord and took a team of six to handle it. Now, something nearly as big has made its appearance in Italy built by a modeler from Leghorn called Macera. This is a beautifully proportioned, scale-type, high aspect-ratio sailplane of just under 21 ft. span. It is radio-controlled and weighs 34 lb. The graceful and seemingly effortless flight of really big models has to be seen to be believed.

Czechoslovakia

Pneumatic control systems for RC, pioneered by Stegmaier in Germany, has spread to Czechoslovakia and is being used by one of the leading Czech experimenters, Jan Hajic. Behind the Iron Curtain, radio models have been almost as scarce as hen's teeth until recently and the Czechs seem to be the most advanced to date, although little data is available on Czech radio equipment. Frequencies used vary considerably, 27, 40, 132 and 155 mc. being employed to date.

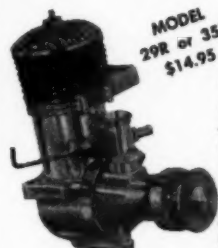
West Germany

A new and attractive line in gas-powered scale kits is the German Heros range. These include two free-flight jobs, a 48-in. Cessna 182 and the inevitable Fieseler Storch (46-in.), plus a 71 in. Sibel Hummel for RC. U-control is represented by famous German warplanes, including the Messerschmitt 109K-14 (the final development of the famed Me.109 and which attained a maximum speed of 455 mph) and the long-nose, 460-mph Focke-Wulf Ta.152C

(Continued on page 63)

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OFFERS YOU A CHOICE OF TWO TOP QUALITY ENGINES, MODEL 29R and 35R, AT ONLY \$14.95. BY TAKING ADVANTAGE OF OUR TRADE-IN DEAL, YOUR COST IS STILL FURTHER REDUCED BY 33%! JUST THINK WHAT A BIG SAVING THIS REALLY IS! YOU CAN'T BEAT THIS SUPER VALUE DEAL, — BETTER GET THE FACTS BEFORE YOU BUY YOUR ENGINE.

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What makes the new ESSCO THT Receiver so outstanding?

"FABULOUS PERFORMANCE" the consensus of opinion of RC modelers everywhere who are presently using this set.

But why is it so good? Its basic circuitry is quite conventional, using the basic HILL circuit. The difference lies in the application of these basic circuits; in the careful selection of the finest components regardless of cost; in the many hours spent in the development and application of circuits to achieve their full performance capabilities. This remarkable receiver has dozens of features, to list a few:

Extreme and stable long distance range. Economical tube & battery life; operates from 30 volt B; some models from 45 volt operation. Uses 2 inexpensive sub-min. HARD TUBES; average life is hundreds of hours. Idle current is only .3 ma; with XMTX signal 2nd stage rises to 4-5 ma; 45 volt models have 6-8 ma rise. . . . Unusually insensitive to hand capacity and noises in and out of the model. You can hold the antenna in your hand and still obtain usable range, how many sets are as stable to allow this? Simple stayput tuning adjustments; once set will stay set for months of operation. Most users report installation of the set in their model with controls set just as received from the factory, no retuning required. Follows the fastest keying or pulsing; ideal for "quick blip" compound escapements. Additional features of this most remarkable receiver would fill pages; people who have seen and operated the first shipments of this set are fully convinced that this ESSCO TWIN HARD TUBE will be almost universally THE RECEIVER in 1957. You will never miss a flight with this set in your model. We are so certain of complete reliability of performance that we offer full refund plus a dollar bonus to those who return the set as not fulfilling our claims. We can safely say that there is not another single channel receiver in the industry that can outperform our set and we include CW and tone sets. In fact our new sets are less disturbed by interference than most audio tone sets.

STD A Model uses IAG4 tubes & MICRO GEM relay \$21.95

SPECIAL A Model, ADVANCE SO relay & 5676 input tube 21.95

MODEL B uses CK521 tubes & std. GEM relay, 45 volt B 18.95

ECON-HILL, a high grade set at kit price with relay 14.95

A COMPANION VMTR for this receiver, and others also is our new HIGH POWER 5 WATT MAC II hand held XMTX. Uses the popular dual 306 tubes for stable output. Components used in this XMTX are designed for transmitting at high frequencies. Receiver parts will operate fairly well in XMTX5 but for top performance & long reliable range best results are always obtained with materials designed for transmitters. This XMTX is housed in handsome grey metal case only 4 x 5 x 6 with sturdy 6 ft. whip antenna. Transmitter is never obsolete, can always be used as foundation unit for ground case job with built-in 2 volt cell and power supply. In this way you need not keep changing equipment as you "grow" with the hobby. Your initial investment is always good. Price of this unit \$21.95

Wired-tested RF assy. for use to modernize or to build up your own preferred layout are available as follows: Model XM131, complete 5 watt MAC II RF assembly with a keyer jack built-in, uses RF chokes to kill hot keyer cable, complete with crystal and tubes 14.95

Model XM13P, as above, w/keyer button 14.95

Model XM13R same as above, w/sensitive keyer relay for top performance 16.95

All models supplied with antenna tuning indicator; eliminates need of ma meter for tuning adjustment. For years the ESSCO vibrator power supplies have been the standard in the industry for reliable high voltage B power for any transmitter. Our prices have always been your best buy. We now have a new power unit for those who want B battery type of regulation. The new 1957 series of ESSCO-PACs have electronic regulator to give equal to heavy duty battery regulation.

Model VS1R, 180 volts out, completely filtered 14.95

Model VS2R, prefab kit to build your own 10.95

The new ESSCO battery charger, model BC3B charges all RC types of wet cells such as BB54, NT-6, Magna Lux & Yardney Silver cells. Separate controls to correctly set charge rate for these units; can also be used to recharge these types from your auto battery 6.95

The best WAR surplus buy of this decade will soon be no longer available. Get your spare unit while still in stock. Extra clean BB54A 2 volt 27 amp 3.95

NEW ITEM: heavy duty 6 volt 15 amp plastic case for larger boat models; 4 1/2 x 4 1/2 x 5 1/2, only 100 units 9.95

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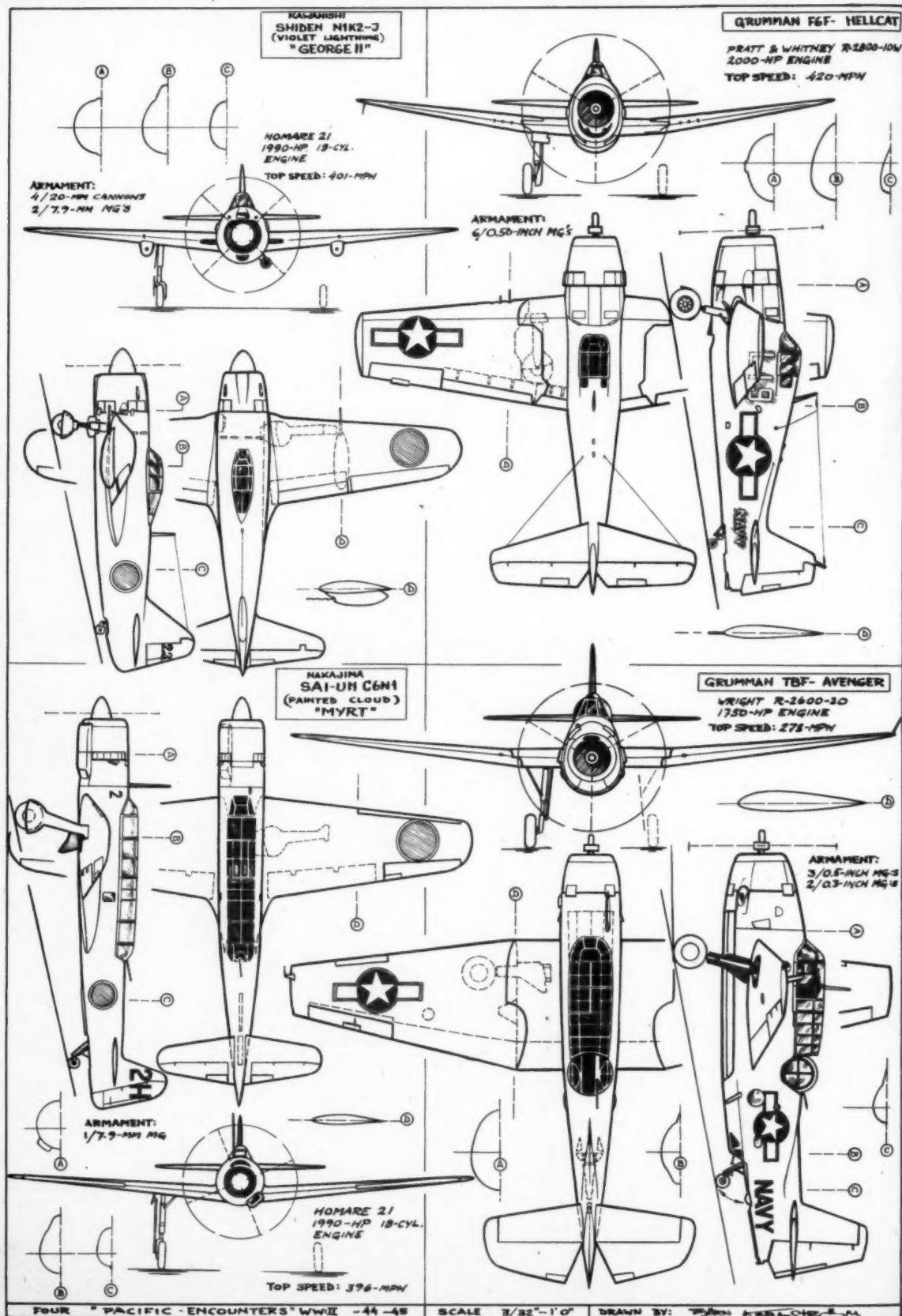
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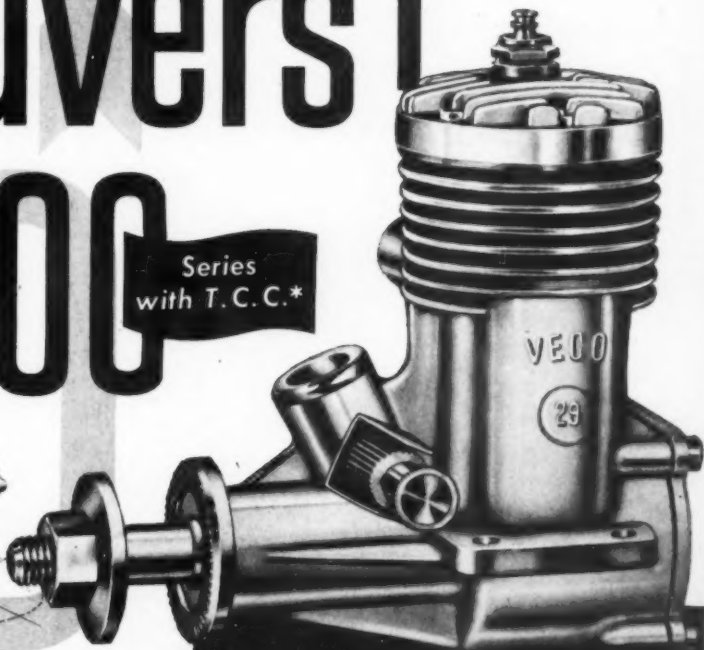
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Man At Work

(Continued from page 7)

free admission . . . one of the most pleasant jobs in the Navy is G. H. Grider's, who runs the hobby shop for that service in the Philippines. Built the Quicke Mail Plane rubber job in the January 1957 issue. Most of the guys never saw anyone carve a prop (have you?), were delighted when the little crate took off, reached the top of the recreation hangar, then glided down beautifully. The simple rubber job took Grider back to the days of summer vacations and building models in the garage. Yep, there's fun in the rubber stuff. And from Capt. Chester Simpson, Shreveport, La., who says MAN failed to mention two great enthusiasts in the Manila area: brothers Al and Epp San Juan—Epp attended the 13th AF Invitational Meet as Simpson's guest and downed the U. S. combat champ twice in less than a minute each time—and with a borrowed plane. In Manila MAN is read, reread and passed on to infinity.

► Seen at an Indiana Contest, a half scale Piper Cub. Drone engine, U-control, all balsa. Man hadn't got up courage—or strength—to fly it. Could carry small boy with ease. And beautifully built. Also has a 30-foot B-36, a 10-foot B-29, and a 10-foot F-80 jet. Thanks to Duane Sanders, Barberton Hobby Shop, Ohio. . . a three cent stamp will get you Bargain Bulletin sample (ask for AIR-257), from America's Hobby Center, 146 West 22nd Street, New York 11, N. Y. Subscription for 12 bulletins a year, one buck. In addition to close-out specials and bargains, Bulletins now include new items announcements. . .

► Pan American kicking around hot idea for PAA Load in RCI Modelers to be asked for reaction to proposals. Limited to 60-second motor run, .15 displacement, ship required to carry eight-ounce dummy, plus any pay load, take off. If hand launched, engine run 45 seconds. One point each ounce pay load, times one point each second duration, minus one point each foot from spot. (Continued on page 57)

Import Review

(Continued from page 35)

difficulty in increasing his output, due to scarcity in adequately skilled and conscientious labor.

In designing this .06 Diesel, David-Andersen's original objective was nothing more than a high-quality addition to the 1 c.c. Diesel class (a popular displacement group in Europe), but the motor was to be original and owe little or nothing to existing designs. This policy has paid off with a motor which, at the time of its introduction just over two years ago, was the most powerful 1 c.c. engine available and, today, it is still one of the top two 1 c.c. motors on a performance basis.

On test, the D-A .06 delivered an output of .095 bhp at between 12,500 and 13,000 rpm and, at only 9,000 rpm, the output was still .08 horsepower, thanks to an unusually good torque of 9.2 oz. in. at around 8,000-9,000 rpm. Such a torque figure is about 15% better than that of the average 1 c.c. Diesel and, translated into prop speeds, means that this .064 cu. in. motor will swing a stock 8 x 4 prop at 9,000 rpm or more. The ability to turn oversized props continues down the scale and we actually had the test engine running smoothly at 3,800 rpm on an 11 x 6.

The motor has a "square" bore and stroke of 11 mm. (.433 in.) giving an

actual displacement of .0638 cu. in. The main casting comprises crankcase, main bearing and lower cylinder section extending up to just above the ports. The cylinder liner fits firmly in this section and is located vertically by a flange and radially locked by a spigot and slot. The top of the case is threaded and a machined dural cooling barrel drops over the upper section of the liner to clamp the entire cylinder assembly via the liner flange. The liner has a wall thickness of 1.5 mm (.059 in.) throughout. Porting consists of two oval, inclined bypass ports which break into the inner wall surface between and slightly below the two exhaust ports. The latter are rectangular and each occupy 90 degrees of cylinder circumference. Ports, incidentally, are arranged diagonally, thus providing an uninterrupted wall surface which cannot foul the full-floating wrist-pin.

The counterbalanced shaft has a 7 mm (.276 in.) dia. journal, is drilled front and back for lubrication and runs direct in the crankcase material. The valve port is circular and gives a 140-degree intake period.

Handling of the D-A .06 is in the best traditions of the Diesel type. Starting is easy, running qualities smooth, even and flexible. Control response is excellent, assisted by a large, comfortably proportioned compression lever that does not burn or cut into the fingers. The needle-valve, reversible and having a separate jet, is provided with a gland and nut for friction adjustment.

Elfin BR. 1.8 (.112 cu. in.)

This engine has the same basic features as the .150 cu. in. Elfin BR Diesel described earlier in the series, namely: reed-valve induction, twin ball bearings, radical porting and rugged construction, and it very closely resembles the remarkable BR 1.49 (.09 cu. in.) model described in MAN for July '55. We shall not, therefore, give a detailed description of the motor here. The main differences between the 1.8 and 1.49 are brought about by a substantial increase in stroke (from .460 to .562 in.), the bore remaining the same at .503 in. Weight is 4.1 oz.

In many respects the BR 1.8 is the best choice of the three models. Being virtually the same dimensions and weight as the .09 model, but having about 18% more power, it has the best power/weight ratio of the three and it also exceeds the power/displacement ratio of the 2.49. This motor will spin a suitable 8 x 4 prop at upwards of 12,500 rpm in the air, a really good climb in free flight should result.

Our test 1.8 started easily and ran best when loaded for speeds of around 10-12,000 rpm. Maximum torque was developed at 9,500 rpm and the peak output was .186 bhp at 13,000 rpm. The only complaint we have to make concerns the contra-piston, which expanded in the bore when hot, so that compression readjustments could not be made after the motor had reached its normal running temperature. It is unlikely, however, that all BR 1.8's share this fault.

Webra Mach-1 Glo

This West German .15 motor is based on the Mach-1 Diesel first described in MAN in April 1954 and featured in Import Review for June '55. As was then remarked, the Mach-1 is an advanced design and one which is right at the top of the tree as regards performance, being, in fact, just about the hottest mass-production Diesel .15 to date.

The bottom end of the new Glo model

(Continued on page 42)

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C SPEED JUNIOR

Thomas Kavan
Dallas, Texas
Speed: 136.0 mph
Engine: McCoy 60
Fuel: Home brew
PROP: 8-12 POWER PROP
Plane: Original

COMBAT SENIOR

Brace Brown
Levelland, Texas
Engine: Torp 35
Fuel: Testor "39"
PROP: 10-6 POWER PROP
Plane: Quicker

NAVY CARRIER JUNIOR

Donald Storer
Belleville, Illinois
249.85 points
Engine: Fox 35
Fuel: Nitro X
PROP: 10-6 TOP FLITE
Plane: J. Roberts Sabre

B GAS FF JUNIOR

Dennis W. Alford
San Diego, Calif.
Time: 14:01.0
Engine: Johnson 29
Fuel: Ohlsson 200
PROP: 10-3 1/2 TOP FLITE
Plane: Sandy Hogan

NAVY CARRIER SENIOR

Glen A. Magra
Cleveland, Ohio
307.15 points
Engine: Fox 59
Fuel: Own mix
PROP: 10-8 POWER PROP
Plane: Bearcat

R.O.W. HAS SENIOR

Lee Hines
Torrance, Calif.
Time: 10:15.0
Engine: Thermal Hopper
Fuel: Thimble Drone Racing
PROP: 8-3 PLASTIC
TOP FLITE
Plane: Ramrod 250

RADIO CONTROL (MULTI)

Howard Banner
Los Angeles, Calif.
197.5 points
Engine: Fox 35
Fuel: K&B 100
PROP: 11-6 TOP FLITE
Plane: Original

PROTO SPEED JUNIOR

Jere Draper
Cleveland, Ohio
Sp: 96.42 (New Record)
Engine: McCoy 29
Fuel: Home brew
PROP: 8-8 POWER PROP
Plane: Veco Redskin

FLYING SCALE CL JUNIOR

Wm. Bryant Brews
Louisville, Ky.
159 points
Engine: K&B 35
Fuel: Exothermic 28
PROP: 10-6 TOP FLITE
Plane: Ju 87B Stuka

FLYING SCALE CL JUNIOR

Jimmie McGrokey
Fort Worth, Texas
303 points
Engine: K&B 29
Fuel: K&B 100
PROP: 8-3 TOP FLITE
Plane: Mustang (orig.)

C GAS FF JUNIOR

Dennis W. Alford
San Diego, Calif.
Time: 12:50.7
Engine: Johnson 35
Fuel: Ohlsson 200
PROP: 10-5 TOP FLITE
Plane: Sandy Hogan

AM. CL. PAA LOAD OPEN

Willard Blanchard, Jr.
Hampton, Virginia
Time: 11:39.4
Engine: Thermal Hopper
Fuel: Thimble Drone Racing
PROP: 8-3 TOP FLITE
Plane: Payne

HELICOPTER

Parnell Schoenky
Kirkwood, Missouri
144.1 points
Engine: Alwood Sig.
Fuel: Nitro XX
PROP: 8-3 TOP FLITE
Plane: Original

STUNT JUNIOR

Dennis W. Alford
San Diego, Calif.
299.5 points
Engine: Johnson 35
Fuel: Home brew
PROP: 10-5 TOP FLITE
Plane: Thunderbird

A GAS FF JUNIOR

Goss Boyd
Los Angeles, Calif.
Time: 12:22.0
Engine: K&B 19
Fuel: K&B 100
PROP: 8-4 TOP FLITE
Plane: Original

R.O.W. GAS JUNIOR

Dennis W. Alford
San Diego, Calif.
Time: 10:28.7
Engine: Johnson 35
Fuel: Ohlsson 200
PROP: 10-5 TOP FLITE
Plane: Sandy Hogan

RC (RUDDER) JR.-SR.

Gerald Nelson
San Leandro, Calif.
83 points
Engine: Fox 19
Fuel: Blue Blazer
PROP: 11-4 TOP FLITE
Plane: Live Wire Cruiser

B GAS F. F. OPEN

Richard McGrath
Long Beach, Calif.
Time: 28:35.1
Engine: Johnson 29
Fuel: Ohlsson 200
PROP: 10-6 TOP FLITE
Plane: Original

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National Stunt
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Stunt
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mounts
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plans with many
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construction features
making it easy to
build and fly.

SPECIFICATIONS:

Wing Area: 550 Sq. in.
Wing Span: 50 in.
Length: 38 1/2 in.
Eng. Sizes: .19 to .35



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is virtually the same as that of the Diesel. It comprises a diecast barrel type crankcase into which are fitted front and rear components, positively aligned by projecting bosses and each secured via flanges with four hex head screws. The front component houses twin ball bearings supporting the crankshaft which has a plain disk web and is not counterbalanced. The rear component is integral with the carburetor, the venturi of which is smoothly blended into the intake port segment. The valve rotor is now a plastic molding and a spraybar type needle-valve assembly is now fitted.

The Mach-1 Glo retains the basic radial-port cylinder liner design of the Diesel. This is interesting on two points: (a) the use of multiple internal bypass flutes of such size that the lower part of the bore is reduced merely to a series of eight 3/64 in. wide bands to guide the piston, and (b) the unusually brief bypass period of only 80 degrees. The cylinder screws into the main casting and, above the port flange, is encased in a screw-on finned dural barrel to which the cylinder head is attached with five screws. A graphited asbestos composition gasket is used to make the head joint. The head formation is conical, matching the piston crown.

Although hot Diesel .15's like the Oliver Tiger and Mach-1, have lately been strongly challenged by some very powerful glo .15's, the top Diesel .15's still have a slight edge in torque developed. We were not surprised, therefore, to find that the Mach-1 Glo did not equal the exceptional 60 lb./sq. in. b.m.e.p. figures of the Mach-1 Diesel and that, in consequence, the Glo did not equal the .295 bhp previously recorded for the Diesel, despite a higher peaking speed. Using a 30% nitro fuel and

the makers' standard glowplug, actual recorded output after two hours' break-in, was .265 bhp at 16,500 rpm. There is no doubt, of course, that this can be further improved with due attention to fuel, plugs and compression-ratios critically matched to atmospheric conditions.

Handling characteristics of the Glo Mach were even better than the Diesel. Starting was very easy and response to the needle control was really excellent, giving progressive control over a full turn, so that the critical setting could be easily established. We ran the motor up to over 18,000 rpm. It remained smooth running at all speeds tested.

The Mach-1 is a short-stroke motor and has a bore and stroke of 15.5 x 13 mm. (.610 x .512 in.) giving a displacement of 2.453 c.c. or .149 cu. in. It weighs 4.7 oz. complete.

The Super-Tigre G.21/35

Super-Tigres have always been noted for fine construction, so when we unpacked one of our two test G.21/35's and saw a spine of unremoved casting flash between the fins, we were mildly surprised. If you are fussy about this sort of thing too, don't let it put you off this new Tigre. Just slip the liner out of the block and take a look at the inside. You will not find a better interior finish on any contemporary production motor casting.

The G.21/35 is a stunt/combat/free-flight motor of typical stunt .35 layout and should not be confused with the twin ball-bearing .29 cu. in. G.21 racing motor. It has a robust shaft of 11 mm. dia. (approx. 7/16 in.) running in a bronze bushed main bearing. The shaft has a crescent counterweight machined-in, which partly balances the reciprocating, as well as the rotating, mass. The gas passage through

the shaft is 5/16 in. dia.

Some modifications have been made to the G.21/35 since it was first introduced last summer. Early production units had an actual displacement of .32 cu. in., derived from a bore and stroke of 19.5 x 18 mm. Subsequent models had the bore increased to 20 mm. to bring the swept volume up to .345 cu. in. This is the model currently imported. Another alteration was the use of a new liner with smaller exhaust and bypass ports, giving a slightly later opening. Latest G.21/35's now have a ultra lightweight piston in which the reduction of reciprocating weight seems to have just about reached the practical limit with ferrous material. This .787 dia. lapped piston, complete with substantial drop-forged dural rod and strong tubular wrist-pin, weighs only one-half ounce. The straight baffle has been moved closer to the bypass side and a new cylinder head contoured to suit. The use of annealed copper as an excellent and trouble-free gasket medium is retained.

We had samples of both early (.32) and late (.345) models for test, the later model proving about 10% more powerful than the .32. Having regard to the well-merited Super-tigre reputation for performance, however, we were a trifle nonplussed to find that neither engine quite came up to the best American .35 standards as regards sheer urge. It may be that both our test samples, by some coincidence, were slightly substandard, but the results of the all-revealing dynamometer tests do seem to suggest that some further development would be profitable. The structural design is, incidentally, one which should readily lend itself to the questful labor of hop-up fanatics.

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Space Tiger

(Continued from page 13)

built in three sizes, as you will notice from the pictures attached to this article. I have presented this article with a table chart, for building other sizes as featured in St. Jean's Ramrod design, June, 1956 MAN.

With this table chart, you shouldn't run into trouble. The construction is simple and rugged. If the plans are followed closely, you shouldn't have any with weight or adjustments, as the latter are built into the model.

FUSELAGE: Cut the fuselage parts from 3/32" sheet unless otherwise stated. After sanding them to shape, cement the two sides together with bulkheads 3, 4 and 5, bringing rear end together with pins, and then cementing bulkheads 6, 7, 7A, 7B and 8. Lay out pylon slot and rudder slot and cut out same, being sure to align top sheet to sides so the pylon and rudder are in dead center of fuselage frame. After top sheet is dry, trim scrap off tip sheet to a taper in line with sides. Now build the pylon frame on plans. While it is drying, cement bulkheads 1 and 2 which are made of 1/8" sheet plywood. Then cut rudder, sand to shape, and cement in place. Now install fuel tank near nose of fuselage. Remove pylon frame from plans and cement in place in fuselage, adding plenty of cement to pylon frame and bulkheads.

Now that bulkheads 1 and 2 are dry, cement them in place at nose of model. When dry, drill holes in bulkheads 1 and 2 for blind nuts, which are to be cemented or soldered in place; hole location in bulkheads 1 and 2 plus bulkheads A and B, depending on the engine you decide using. Cut six ribs and cement to sides of pylon

frame. Plank side of pylon with 1/16" sheet in vertical position, trim scrap off pylon and cement pylon platform made of 1/8" plywood on top of pylon. Cement bottom sheet in place, and stabilizer platform, also made of 1/8" sheet. Sand all edges round and dope and sand between coats. Two coats dope required.

WING: Begin wing by cutting out ribs, taking notice of platform ribs in dotted lines and extra large slots in ribs for gussets at tip and center breaks for dihedral details. Next, notch wing rib locations in trailing edge stock. Build up trailing edge to line up with rib under camber and pin securely. Now add leading edge which is made up of two pieces; one 1/4 x 1/8", one 3/16 x 3/8". Pin these in place, making sure that you leave at least one inch overhang for wing tips.

Install ribs, cement in place, and add top spar which is 1/8" sq. When dry, remove from plans, adding bottom spars 1/4 x 1/8" and 1/8" sq. Now cement scrap 1/8" sheet in-between spars at the wing tip. Trim to shape, add gussets to dihedral breaks when wing is built up to proper dihedral. Cement same and, when dry, sand to shape, then giving frame two coats of dope, sanding between coats.

STABILIZER: The stabilizer construction follows the same style as the wing.

COVERING: You can use Jap tissue or Silkspar throughout the model. Apply tissue dry, using a mixture of dope and cement to adhere it to the framework. Work carefully and slowly to get a neat smooth job. When wing and stabilizer are covered, spray the tissue with a light coat of water, allow to dry before going further. The water will shrink the tissue tight. When dry, apply four coats of thinned fuel proofed dope. The weight

is important so don't apply more dope than required, since this will only cut down the performance of the model.

FLYING: After attaching the wing and stabilizer, test glide the model in tall grass. If the model stalls, add clay to nose for proper trim. When you are satisfied with the glide which should be very flat, prepare the model for its first flight under power.

The rudder tab is used to adjust the angle and size of circle under power. The tab is not used for glide adjustment. The tab only counteracts right thrust setting—which is built in. If the model takes off but goes into VTO climb position, a 1/32 in. left offset of the tab will open up the climb circle, giving better recovery after the engine quits. Never use right tab as it will cause model to wind in under power.

For glide adjustment tilt left side of the stab high—as seen from the rear. Do this with a 3/32 in. balsa shim at the edge of the stabilizer platform. A couple of spots of cement will hold the tab setting. The model then will turn left in the glide.

Be sure to light the dethermalizer fuse as you cannot take chances. From here on, you are on your own. I adjust my model to go right in large circles under power, and left tight turns in the glide. With this flight pattern, I find no loss due to model stalling or diving.

Be sure to run your engine rich for the first two or three flights in order to see how the model handles. When you are satisfied with its adjustments, lean out the engine and be sure you have the timer set for only five seconds when flying other than contests. Remember, this is a hot contest ship and will be out of sight in nothing flat unless you control your timer.

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CONTINENTAL MODELS

100 BOX 192 • 100 BOX 192 • 100 BOX 192

In all three model sizes you will find that you have a model that will hold its own in any contest. Due to my occupation as a merchant marine engineer I was unable to attend contests. With my comeback to model flying, I for one, hope to enter the Wakefield and FAI power event and all other contests in 1957.

On November 6, 1955 I went flying as usual at Pennsylvania Ave. and Belt Parkway, but the wind was so rough that the regular RC boys stood about the fire warming themselves while I adjusted my timer and test ran the engine of my Space Tiger .15. I decided to see what this ship could do with a 20 mile wind. As I was about to launch my ship, I discovered my timer became defective, but because of the high blowing winds I didn't feel this would carry my ship very far, so after several protests from John Zaic and some of the RC boys, I decided to let her go, which, much to my surprise, the "Space Tiger" headed vertically up to about 1500 feet, when it leveled off as the engine quit.

It must have caught a thermal because in a few minutes my ship had climbed up and out of sight. On November 22, 1955, I was phoned by a party out in Bethpage, Long Island, which is over 30 miles from the original flying site. I was asked to pay \$20.00 for the return of my ship which the boy's father had picked up near the Grumman Aircraft Corp. flying field. After several arguments about private property, I finally paid \$10.00 for my model's return. Let this be a lesson!

PAA Junior Jet

(Continued from page 29)

Total of the best of two flights was 2 minutes 20.2 seconds.

Construction of the Junior Jet model is very simple. The wings are cut to shape from 1/8" x 3" sheet balsa and sanded to the airfoil shape shown. Next, cut out the center portion of each wing panel as shown and add 1/16" x 3/16" ribs. Sand the ribs to airfoil shape after the cement has thoroughly dried. Block up each wing panel to obtain the proper dihedral and sand the bevel on the center joint using a flat sandpaper block. Pre-cement the center wing joints and, when dry, cement the two halves together with a liberal coating of cement. Finally, cover the wing panels on top and bottom with tissue paper, shrink the paper with water, and apply one coat of clear dope.

The fuselage boom should be made from hard 1/8" sheet balsa. Be careful not to sand the areas where wing and elevator mount. These should be flat for easy mounting of the surfaces. Cut the elevator and rudder from quarter-grained 1/16" sheet balsa and sand to a streamline shape as shown. Cement the elevator and rudder in place, carefully lining them up with the fuselage boom. Next, cement the wing in place. The built-up portion of the fuselage now can be added. Cut two fuselage sides from 1/16" balsa. Mount a 1/16" hard balsa bulkhead on the front of the fuselage boom. Now cement the beveled edges of the fuselage sides to the fuselage boom at "A" as shown and also cement them to the sides of the bulkhead. When these cement joints are dry place the second 1/16" bulkhead in position 1/2" in front of the other one and then bend in the fuselage sides so they can be cemented and pinned to the tapered nose block. After the cement points of all fuselage components are dry, add the 1/16" plywood mount for the Jetex motor. Then cement the two 1/16" balsa bottom panels

(Continued on page 52)

Taifun

DIESEL ENGINES AND KITS



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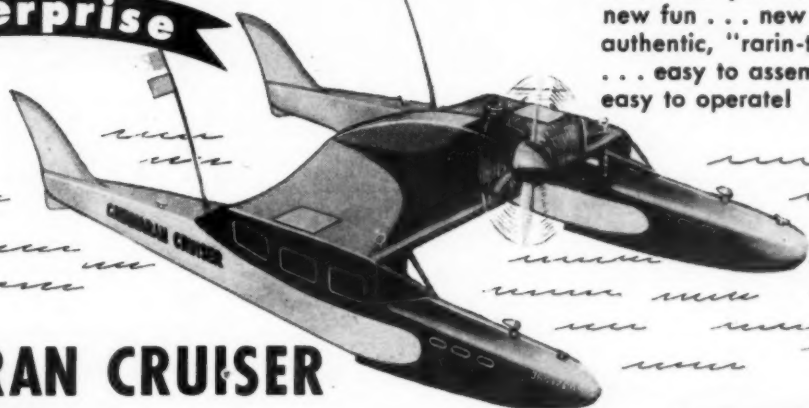
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Contest Calendar

Visit these meets and talk shop with fellow modelers

1-Brooklyn, N. Y.: Class AAA 12th Annual Mirror Model Flying Fair for CLS, CL, TR, NC, beauty, CLC, novelty, FFG, RC, PL and CC. Restricted to first 1,000 entrants. H. Ted Clodius, Contest Director, New York Mirror, 235 East 45th St., New York 17, N. Y.

1-2-Longview, Tex.: Class AAA 2nd Annual Tri-States Model Airplane Championships for FFG, OR, TLG, RC, OHLG, CL, CLS and CLC. Maurice Teter, C.D., 2025 Abrams Rd., Dallas, Tex.

1-2-Amarillo, Tex.: Contest for FFG, OHLG, TLG, FFFS, RC, CLC, CLFS, CLS and CL. For info: Howard Holcomb, 2812 Hayden St., Amarillo, Tex. Pending.

2-Goodland, Kans.: Class AA N. W. Kansas Gashoppers' Annual Meet for FFG, RC and RC boats. Kenneth Armstrong, C.D., Goodland, Kans.

2-Delaware, O.: Class AA C.A.P. and Jaycee Model Meet for FFG, CL, CLS, CLC, OR and RC. George W. Morrison, C.D., 225 So. Sandusky St., Delaware, O. Pending.

2-Standley, Kans.: Class AA Raytown Flying Clodhoppers' 2nd Annual Free Flight Gas Meet. Willard Bivins, Jr., C.D., 10405 E. 59th St., Raytown 33, Mo.

2-Galesburg, Ill.: Class AA 8th Annual Memorial Day Contest for scale, CLC, TR and CL. Andrew G. Walsh, C.D., 1229 E. Knox St., Galesburg, Ill.

7-9-Lynchburg, Va.: (A) Memorial Day Invitational for RC. Restricted to members of RCLNC and guests. Ralph N. Corelle, C.D., 834 Fairmont Ave., Salisbury, N. C. Pending.

9-Santa Anita, Calif.: Team Race. Pending.

9-Long Island, N. Y.: Class AAA Gas Monkeys' Tenth Annual Long Island Championships for FFG, Jetex, OHLG and OR. Edwin W. Howe, C.D., 5 Camdike St., Valley Stream, N. Y.

9-Reading, Pa.: Class AA Combat Jamboree for CLC. Charles P. Selin, C.D., 212 Pershing Blvd., Reading, Pa.

9-Hartford, Conn.: Class AA Greater Hartford Model Airplane Club Team Race. Joseph F. Greene, Jr., C.D., 82 Margaret Lane, Glastonbury, Conn.

9-Bellefonte, Ill.: Belleville Flying Dutchmen 3rd Annual Contest for CL, CLS, CLC, CLFS, NC and RR. Walter E. Harter, C.D., 1011 W. Main, Belleville, Ill. Pending.

9-Corvallis, Ore.: Class AA Control Line Contest for CLC, CLS and scale. Andrew J. Culver, Jr., C.D., 1289 E. Grant St., Corvallis, Ore. Pending.

9-Osawatomie, Kans.: Class AA Osawatomie Modelers Third Annual Model Airplane Contest for CLC, CLS, CL and RC. Wayne Lee Goetz, C.D., R. R. 1, Hillsdale, Kans.

9-Dallas, Tex.: Class AA Cliff Model Club 2nd Quarterly Contest for FFG and TLG. William T. White, C.D., 2930 Kingston, Dallas, Tex.

9-Cedar Rapids, Iowa.: 12th Annual John Pavlis Model Airplane Meet. Lawrence H. Conover, C.D., 1210 18th Ave., S. W., Cedar Rapids, Iowa. Pending.

9-West Allis, Wisc.: (AA) Second Wisconsin Hobby Dealers Association Meet for CLS, CLC, CL and scale. Robert Eggleston, C.D., 2857 So. Linebarger Terr., Milwaukee 7, Wisc.

9 & 16-Cleveland, O.: (AA) Lakewood Flite-Masters' Meet for FFG, CLS, CLC

and CL. Don S. Cameron, C.D., 1472 Victoria Ave., Lakewood 7, O.

14-16-Wiesbaden, Germany: Class A 1957 USAFE Model Airplane Contest for FFG, TLG, OHLG, OR, CLS, CLC, CLFS, CL, TR and RC. Restricted to Air Force personnel and dependents. Capt. Paul T. Foret, C.D., 10th Field Maint. Sqdn., APO 123, New York, N. Y.

15-16-Houston, Tex.: Pending.

15-16-Columbus, O.: Class AA Buckeye Model Meet for FFG, NC, CLC, CLS and RC. R. E. Beck, C.D., 556 Westphal Ave., Columbus 13, O.

16-Nordic Semi-Finals for 1957 USA team.

16-Ft. Worth, Tex.: CRA Record Trials for all outdoor classes. E. E. Scott, C.D., 7409 Arlie, Ft. Worth, Tex.

16-Flint, Mich.: Class AA Flint Proto and Team Race Contest. Donald W. Borrow, C.D., 1261 S. Genesee Rd., Flint, Mich.

16-Berwick, Pa.: Class AA Busy Bees' Model Air Meet for CLS, CLC, NC and TR. Charles T. Cooper, C.D., 531 Broad St., Nescopeck, Pa.

16-Chicago, Ill.: Class AA Chicago U-Liners' Meet for CLC and CLS. Leonard Rinkin, C.D., 27 E. 137 Pl., Riverdale 27, Ill.

16-Endicott, N. Y.: Class AA 2nd Annual Aeroguidance Society Meet for RC. Richard C. Allen, C.D., 57 Brookside Ave., Apalachin, N. Y.

16-Wilmington, N. C.: (AA) Southeastern North Carolina Stunt Championship for CLS, CLC and TR. W. M. Peck, Jr., C.D., 2409% Oleander Dr., Wilmington, N. C.

16-E. St. Louis, Ill.: (AA) Parks College Cloud Hounds' Model Airplane Contest for FFG, OHLG, CLC, CLS, PL, CC and RR. W. R. Netzeband, Jr., C.D., 944A Edna Ave., Kirkwood, Mo.

16-Enid, Okla.: (AA) Meet for CLS, CL, TR and proto speed. Herbert W. Brown, C.D., 2213 Mary St., Ponca City, Okla. Pending.

22-23-Hampton, Va.: (A) 5th Annual Radio Control Roundup. John Worth, C.D., 300 Patricia Dr., Hampton, Va.

22-23-Houston, Tex.: (AAA) Houston International Model Plane Meet for CL, CLS, RR, CLC, scale, FFG, TLG, and OHLG. Robert H. Hampton, C.D., 121 Tallant Dr., Houston 22, Tex. Pending.

23-Tulare, Calif.: Tulare Sky Kings' Record Trials for FFG. Don Peacock, C.D., 912 Apricot, Tulare, Calif.

23-Sacramento, Calif.: Class A N.C.F.F.C. Contest for FFG and TLG. Restricted to NCFCC members. Frank Hauser, C.D., 517 Fruitvale Ave., Yuba City, Calif.

23-Omaha, Nebr.: Class A 2nd Annual Omaha Aeroneers' U-Control Contest for CLS, CLC and RR. Jerry Bahula, C.D., 6933 Pinkney St., Omaha 4, Nebr.

23-Mankato, Minn.: Class AAA Minnesota State Model Meet for FFG, CL, CLFS, FFFS, CLS, CLC, TLG and RC. William B. Thomas, C.D., Box 713, Lake Crystal, Minn.

23-Ithaca, N. Y.: Class AA Ithaca Model Squadron Second Annual Meet for CLS, RC and CLC. Charles Phillips, C.D., 325 Coddington Rd., Ithaca RFD, N. Y.

23-Monroe, La.: Class AAA Monroe Model Maniacs' 3rd Annual Model Airplane Contest for CLS, CL, CLFS, CLC

and RC. Armand E. Beard, C.D., 2780 Point Dr., Monroe, La.

23-Norwood, Mass.: Class A 1/2 Free Flight Gas Meet. Restricted to NSME members. Albert L. Trefethen, C.D., 103 Oakdale Ave., Dedham, Mass.

23-Collegeville, Pa.: Class AA Cross Key Hawks' 3rd Annual Meet for CLS, CLC, TR, RR, flying scale, NC and destruction derby. Raymond Nyce, C.D., 93 W. 3rd Ave., Collegeville, Pa.

23-South Bend, Ind.: Class AA 2nd Annual Exchange Club of South Bend Model Meet for FFG, OHLG, RC and CLC. Jack W. Greene, C.D., 1143 E. LaSalle, South Bend, Ind.

23-Hagerstown, Md.: Pending.

23-Hamilton, Ohio.: Class AAA Hamilton Aero Club Meet for FFG, OHLG, OR and beauty. Walter L. Weber, C.D., 435 Dick Ave., Hamilton, Ohio.

23-DeKalb, Ill.: Class AA DeKalb Cloud Dusters' Control Line Meet for CLC and balloon bursting. Dutch Hess and John Bell, C.D.'s, 137% E. Lincoln, DeKalb, Ill.

23-Detroit, Mich.: Pending.

23-Richmond, Ind.: Pending.

23-Wichita, Kans.: Class AA 5th Annual Wichihawks' Free Flight Contest for FFG. William H. White, C.D., 603 W. 30th St. South, Wichita 13, Kans.

23-Inglewood, Calif.: (AA) Skywolves' Rat Race. Don C. Crystal, C.D., 805 E. Palmer Ave., Compton, Calif.

23-El Cajon, Calif.: (AA) First Annual El Cajon Modelers Association Meet for CLS, CLC, RR, CL and TR. Bill Alford, 6937 Madrone Ave., San Diego, Calif.

23-Pittsburgh, Pa.: (AA) ARCS Meet for RC. Fred J. Collins, C.D., 29 Stewart Ave., Pittsburgh 27, Pa. Pending.

24-26-Sumter, S.C.: Class A Southeastern Conference Model Meet for OR, TLG, OHLG, FFG, PL, CC, RC, CL, CLS, CLC, CLFS and TR. Restricted to Air Force personnel. Carl E. Trego, C.D., Box 726, Shaw AFB, S. C.

24-30-Tachikawa Air Base, Japan.: FEAF Elimination Contest. Pending.

29-Ft. Leonard Wood, Mo.: Class A Installation Level Meet of the All Army Model Airplane Meet for FFG, CL, OHLG, CLS, and CLC. Restricted to Army personnel. H. M. Schreiber, C.D., 3507 Prospect Ave., Kansas City 3, Mo.

29-30-Weymouth, Mass.: Class AAA Yankee Championships for PL, FFG, OR, TLG, RC, IHLG, IR, NC, CLS, CL, CLC, and flying scale. Edward G. Dolby, C.D., 25 Exchange St., Rockland, Mass.

29-30-Frederick, Md.: Class AAA District of Columbia Radio Control Club Meet. Donald R. Clark, C.D., 4202 Brookfield Dr., Kensington, Md.

29-30-Ft. Wayne, Ind.: Class AA Fort Wayne Flying Circuits' Annual Two Day Meet for RC. Donald R. Briggs, C.D., 530 Spring St., Ft. Wayne, Ind.

30-Cincinnati, O.: Class AAA Cincinnati Aeromodelers' Annual Meet for RC and CL. Gerhard A. Vogeler, C.D., 2873 Carroll Dr., Cincinnati 11, O.

30-Fresno, Calif.: Fresno Gas, Model Record Trials for FFG. Jim Scheidt, C.D., 2225 Brown, Fresno, Calif.

30-Minneapolis, Minn.: Class AAA Upper Midwest Free Flight, Radio and U-Control Championships for FFG, OHLG, TLG, OR, CLS, CLC, CL, scale and RC. Mark E. Jones, C.D., 5529 Concord Ave., Minneapolis, Minn.

30-Flint, Mich.: Class AA Flint Balsa Termites' Annual Contest for CLC, CLFS, CLS and proto speed. Donald Borrow, C.D., 1261 S. Genesee Rd., Flint, Mich.

30-Grand Rapids, Mich.: Pending.

30-Aurora, Colo.: Class AAA 5th Annual Aurora Prop Busters' Model Meet

(Continued on page 48)

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Larry Thomas Jr.
Phillip Bussel Sr.
Bill Wisniewski Open



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Gene Boyd Jr.
Jim Watson Sr.
J. R. Hayden Open



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Jimmie McRoskey Sr.	with TORPEDO .29
Capt. Richard Moorhead Open	with TORPEDO .19 (6)

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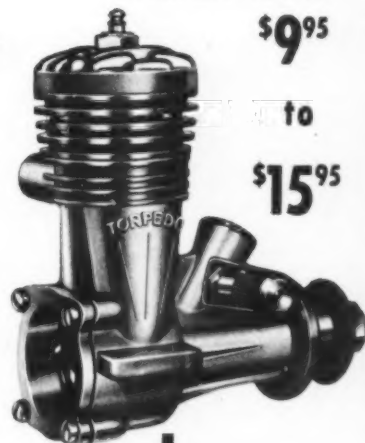
Class "C" Open — James Patterson — Torpedo .35, Proto Speed Sr. — Richard L. Starr — Torpedo .29R
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for CLC, RR, CLFS, NC, FFG, FFFS, OHLG, TLG, RC and jet PL. Harley W. Elmore, C.D., 9820 E. 13th Ave., Aurora 8, Colo. Pending.

30-Waukesha, Wisc.: Pending.
30-Maywood, Ill.: Class AA Balsa Bugs' Annual Model Airplane Contest for CLC. Ronald Kipp, C.D., 901 Mapleton Ave., Oak Park, Ill.

30-Largo, Fla.: (AA) 2nd Annual Largo Prop Twister Contest for CLC, CLS, CL and flying scale. Claude J. Rinehart, C.D., 711 Second St., S. W., Largo, Fla.

30-Venice, Ill.: Pending.
30-Wahoo, Nebr.: (AA) 2nd Annual Omaha Aeroneers' Free Flight Contest for FFG and TLG. Jerry Bahula, C.D., 6933 Pinkney, Omaha 4, Nebr.

JULY
4-Ventura, Calif.: Class AA Annual July 4th Elimination Combat Contest. L. W. Cozard, C.D., 59 East Main, Ventura, Calif. Pending.

4-7-Buffalo, N. Y.: Class AA Third Annual July R/C Meet. Harold C. Keller, C.D., 39 Lorfield Dr., Snyder 26, N. Y.

4-7-San Bernardino, Calif.: (A) Invitational All Service Model Airplane Meet. Restricted to Armed Services personnel. John E. Brodbeck, C.D., 14907 S. White Ave., Compton, Calif.

6-7-Tulsa, Okla.: Class AAA Tulsa Clue Dobbers' 8th Annual Free Flight Contest for FFG, TLG, OHLG, OR, RC, FFFS and PL. Stanley B. Childs, C.D., 6762 E. Haskell Pl., Tulsa, Okla.

617-Burlington, Vt.: Class AAA Vermont State-Regional Championships for CLS, CLFS, CLC, CL, RR, TR, FFG, FFFS, TLG, RC, OR, NC and PL. Fred E. Ashcraft, C.D., Burlington Free Press, Burlington, Vt.

7-Chicago, Ill.: Class AAA 5th Annual Chicago Prop Nutz Flying Meet for TLG, OR, OHLG, Jetex, FFG and RC. Peter J. Sotich, C.D., 3851 W. 62nd Pl., Chicago 29, Ill.

7-Easton, Pa.: Class AA 5th Annual Air Meet for FFG, OR, OHLG, TLG, RC, CLS, CLC, CL and beauty. Russ Sottosanti, C.D., 1113 Keane St., Easton, Pa.

7-Ionia, Mich.: Class AA Ionia Model Contest for RC, FFG, CLS, CLFS, CLC and TLG. Frank Stanford, C.D., 4501 Magnolia, S. W., Grand Rapids, Mich.

7-Orangeburg, S. C.: (AAA) 3rd Palmetto Regional Championships for FFG, TLG, OHLG, RC, CL, CLS, CLFS and CLC. Larry Bly, Jr., C.D., P. O. Box 744, Orangeburg, S. C.

13-14-Kansas City, Mo.: Class AAA K. C. R. C. Association Annual Radio Control Meet. Paul Runge, C.D., Box 301, Higginsville, Mo.

14-Evansville, Ind.: Class AA 11th Annual Model Flying Circus for CLS, scale, CLC, non-flying scale, CL and RR. H. W. Berning, C.D., 2012 Conlin, Evansville, Ind.

14-Santa Anita, Calif.: Team Race. Pending.

14-Dallas, Tex.: Class AA Cliff Model Club 3rd Quarterly Contest for FFG and TLG. William T. White, C.D., 2930 Kingston, Dallas, Tex.

14-Flint, Mich.: Class AA Flint Balsa Termite's Annual Contest for FFG, OHLG and TLG. Donald Borrow, C.D., 1261 S. Genesee Rd., Flint, Mich.

14-Friendship Linthicum, Md.: Class AAA 4th U-Control Olympics for CLS, CLC, CL, TR, NC, CLFS, Air Force rocketry and clobber. F. G. Stroth III, C.D., RFD #9, Pasadena, Md.

14-Hartford, Conn.: Class AAA 6th Annual Greater Hartford Control Line Meet for CLS, CLC, CL and NC. Richard Matava, C.D., 47 Stevens St., Avon, Conn.

(Continued on page 50)



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FROM A MODELER'S NOTEBOOK:

New Planes, Prizes and Pilot Awards Make More Flying Fun.

BY CARL GOLDBERG

HI FELLOWS — There are many new notes and a hot new contest idea (see below) in my notebook this spring and I thought you would be interested in some of them. It's really great to see that more and more modelers are getting the thrill of flying as well as building. There's nothing quite like watching that plane taking shape step by step, and looking ahead to the excitement of flying it!

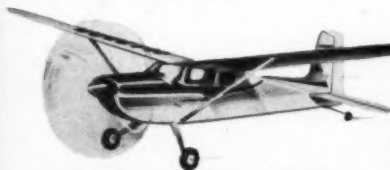
NEW FREE FLIGHT — THE 1/2A BLAZER



Pleased as punch to date with performance of 1/2A Blazer. It has lived up to all my expectations . . . the unusually thin wing gives blazing climb, flat glide . . . beautiful soaring flights . . . it's difficult to describe your feelings as you see it spiraling up there. Sure ought to win its share of contests. All die-cut balsa parts, step-by-step illustrated full-size plans. 40" span, designed for .049 engines. The Blazer is on your dealer's shelf now . . . and it's only \$2.50.



THIS IS THE RANGER 28, my new semi-duration model. It's easily capable of flights of up to a minute, and can often do much more. A larger, lighter version of the Ranger 21. It's really something new — prefab plus paper! You'll be surprised at how easy it is to build. Big 7" plastic prop, all interlocking die-cut balsa parts, two colors of tissue, formed landing gear, decals, etc., and a long powerful rubber motor to make a wonderful 28" span long-flying model. Full size plans, too, with step-by-step instructions. People raise their eyebrows when I tell them you can buy it at your dealer's for \$1.



HERE'S A PIC of my new Cessna 180. I think you'll agree it's an all-balsa beauty, even if I do say so myself. 21" wingspan with fine, stable flight characteristics. This

HAVE A NOTE HERE to tell you about the winner of our first suggestion contest (you know, it's mentioned on the plan in each kit). I was very happy, indeed, to send a Babe Bee .049 engine as first prize to Arthur B. Knee of Pittsburgh, Pa. for his terrific suggestion on new planes to build. I intend to award prizes every three months for best suggestions, so keep them coming, fellows . . . your ideas have been great.

is the "champion of business-liners!" Everything's in the kit to make this simplified flying model that looks like the real job — all die-cut balsa parts, formed landing gear, 11" rubber motor, big decal sheet, die-cut windshield, 5" plastic prop, nose spinner, etc. Your dealer has it now, and the price is \$1.

AND HERE'S THE SHOT of our very popular Shoestring Racer. Your response has been terrific, so I'm continuing to ship them out. With 16" wingspan and all the parts and trimmings in the kit, you seem to think it's a good flying buy at \$1. And that's just what your dealer is asking for it. As a flyer, this ship is pretty close to the Ranger 21.



BY NOW SOME OF YOU may have seen the movie "Spirit of St. Louis" with James Stewart. Isn't it a thrilling film! Your dealer has my model kit — the only all-balsa rubber-powered flying model — of the plane Lindy flew. They're \$1, too. 21" wingspan, all die-cut balsa parts, in fact everything needed to make a miniature duplicate of the ship that gave the world its greatest flying thrill! Best time with this model so far is by Gerald Elliott of Grosse Pointe, Mich. — 1 min. 13 sec. — sanded very light.



BY THE WAY, did you know that all our \$1 kits contain hints on How To Get Extra Long Flights?



I'VE PUT A PICTURE below of the Ranger 21 that a great many of you like. Dealers have sent in many re-orders on this one so I know it has your approval. It's nice to know that I designed one that you like so well. To repeat our claim — it's the best flyer in its class! 21" wingspan and complete at \$1 too.



INCIDENTALLY, I'VE BEEN GETTING applications from all over the country for that Model Pilot's Certificate we offer (details on the \$1 kit plan too). You just beat the time specified on the plan, using one of my kits. First application came from Texas, within a few days after the kits went on sale. They do things in a big way down there! We've had some from girls, too! So far, a chap in Wilmette, Ill., holds the best time: 1 min. 26 sec. with the Ranger 21. Keep 'em flying!

NOW HERE'S THE BIG NEWS I have for you. To help increase your flying fun, I'm going to make the following offer, good until Sept. 30, 1957. Get up a simple flying contest with your friends, (or perhaps your Scoutmaster will run it) with 50c each as an entry fee, to be used for prizes. Make it a contest for Carl Goldberg \$1 models. Collect all the kit boxes for the planes in the contest. Then just cut out and send me the names of the planes, from the front of each box, plus the entry fee money, and I'll promptly send you planes, engines, etc., that you pick from the list below to be used as your contest prizes:

- 3 names plus \$1.50 for 1/2A Blazer, a \$2.50 value.
- 5 names plus \$2.50 for 1/2A engine, a \$3.95 value.
- 8 names plus \$4.00 for Blazer and engine, a \$6.45 value.
- 12 names plus \$6.00 for wrist watch, a \$9.95 value.
- 20 names plus \$10.00 for camera or electric drill, a \$19.95 value.

Here is how you might run the contest. Hold it in a park or large school playground. Time the models with a stopwatch or sweep second watch. Give everybody five flights, longest flight wins. I suggest you cut the time of the Ranger 28 in half, so as to give the other ships a fair chance.

It's really easy — and you'll all have a terrific time!

Of course, another way is to make a collection of my planes like a lot of fellows are doing, and earn the above prizes yourself.

And listen to this — the one who sends in the most Carl Goldberg plane name cut-outs for the above prizes by Sept. 30, 1957, will receive in addition FREE a genuine \$39.50 Transistor Portable Radio as a grand prize token of my appreciation.

Tell your dealer about it, too. He can tell other fellows about your contest, and the more entries the more prizes. So what do you say — let's build those planes and LET'S GET FLYING!

Carl Goldberg

P.S. The easiest way to get these planes, of course, is to see your dealer. If no dealer near you, or he doesn't have them, send me cost of plane plus 25c each for postage and packaging. Better yet, send cost of any three and I'll pay the postage!



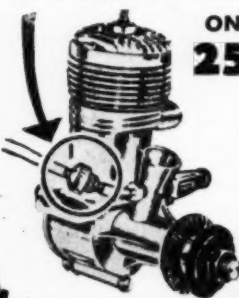
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14 & 21—Cleveland, O.: 22nd Annual Junior Air Races for FFG, TLC, OR, PL, Rocket, NC, CL, CLS and CLFS. For info.: Charles Tracy, Aviation Editor, The Cleveland Press. Cleveland 14, Ohio. Pending.

21—Tulare, Calif.: Tulare Sky Kings' Record Trials for FFG, Don Peacock, C.D., 912 Apricot, Tulare, Calif.

21—Ft. Worth, Tex.: CRA Record Trials for all outdoor classes. E. E. Scott, C.D., 7409 Arlie, Ft. Worth, Tex.

21—Jackson, Mich.: Class AA Jackson Radio Control Contest. David Maricle, C.D., 148 W. Main, Milan, Mich.

21—Casper, Wyo.: Class AA Oil Capital Model Plane Meet for CLC, CLS, CLFS, RR, proto speed and Air Force rocketry. Bill Judge, C.D., 2154 S. Box Elder, Casper, Wyo.

21—Wilkes-Barre, Pa.: Class AA 3rd Annual Goose Greasers Model Airplane Club Control Line Jamboree for CLC, CLS, beauty and destruction derby. A. J. Kovelski, C.D., 331 Adams Ave., Scranton, Pa.

21—Pittsfield, Mass.: Pending.

21—Ingelwood, Calif.: Class AA Skywolves Combat Meet. Don C. Crystal, C.D., 805 E. Palmer Ave., Compton, Calif.

22-26—Mitchell AFB, N. Y.: Air Force World Wide Model Airplane Championships. Restricted to qualified Air Force

personnel. Pending.

28—Fresno, Calif.: Fresno Gas Model Record Trials for FFG. Jim Scheidt, C.D., 2225 Brown, Fresno, Calif.

29-Aug. 4—Willow Grove, Pa.: Class AAAAA National Model Airplane Championships for IHLG, IR, CL, CLS, CLC, TR, CLFS, NC, FFG, FFFS, RC, helicopter, OR, TLC, OHLC, rocket, CC, PL. For info: Academy of Model Aeronautics, 1025 Connecticut Ave., N. W., Washington 6, D. C.

The Puss Moth

(Continued from page 24)

model, careful consideration was given to the wing mounting. The method used here-in has proved very satisfactory and also makes for ease of transportation, since both wings are detachable. Follow the construction on the plans and use ample cement to glue the wing supports to the fuselage members. (Note that the wire wing mounts are bent upward and rearward to accommodate the dihedral and sweepback.)

When the stabilizer is dry and sanded to shape, pin it in place atop the fuselage, and on the underside only, cement to each side of each center rib a piece of 1/16 x 1/8 in. balsa flush with the top longerons. This not only acts as a placing guide for the stabilizer on the fuselage, but will form the lower stabilizer to which the tissue covering is attached.

Dress snaps, approximately 3/8" in diameter, are used to hold the wing struts in place. Bend the male section of the snap to a "U" shape and bind it with wire to rib #6. The other section of the snap is embedded in the streamlined section of the wing struts. A rubber-band pulled through the 3/8" aluminum tube, and hooked

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Will the Midgets Come Back?

(Continued from page 11)

Steve Wittman by 2/5 seconds.

Later in the season, in Detroit, there was held the last Continental Trophy Race and, indeed, the last big, national scope civilian air race for many years to come. Completely disregarding the approaching collapse of racing, four pilots broke the mythical 200mph barrier during time trials, with Wittman then outlasting Jones and Falck in the feature event to win at 197.29 mph.

1959 was the first peacetime year with in memory during which there was no closed course air racing. The aircraft industry and military air services, which seem to shudder at the mere mention of exhibition flying, had succeeded in stifling pylon racing despite continued spectator enthusiasm and an excellent safety record.

Early in 1954 the Professional Race Pilots Association, convinced that there was still a great demand for racing, determined to "do or die". After months of concerted effort by the men most directly involved in racing, a very successful small race was held in Dansville, N.Y., again the following year at the same spot. Most of the top Eastern race-pilots competed in these semi-pro events, along with some very talented newcomers. Racing people and spectators were certainly still enthusiastic.

As a direct result of the interest shown in these meets, there was a definite trend upward in 1956; there were small races in Wisconsin, Illinois and New York. The last-named was at Niagara Falls and was not exactly a small race. Flying on the fast 2½-mile course for the first time since 1952, the die-hards smashed every record in the book, with Bill Falck hitting the all-time high of 208.81 mph in trials. Bill won the final heat at 199.96 mph, trailed by Wittman and a sensational new name: Tom Cassutt.

Although there has been no official announcement of races scheduled for 1957, meets are being planned for New York, Ohio, Indiana, Wisconsin and Oklahoma, with one of these promising to be of the size of the old Goodyear Trophy Race.

And so, a decade of midget airplane racing has passed. We have seen 60 airplanes and 80 pilots in two dozen officially-sanctioned meets. We have seen flying men who were long on ideas and enthusiasm but short on finances and facilities accept a challenge and produce a class of airplanes with performance that has astounded the so-called experts. It has been one of the truly great eras in the history of sporting aviation—and it is far from over.

PAA Junior Jet

(Continued from page 44)

in place. At this point it might be a good idea to leave off the top panel of the fuselage front in case clay might be needed to balance the plane. The rear panel of 1/16" balsa can be added now and trimmed to shape after it dries.

The payload dummy is constructed as shown in the drawings and loaded with melted solder until it reaches the required weight. PAA rules require that the dummy have vision forward and to both sides of the head, so some sort of transparent canopy is needed. The plastic container from a Thimble Drome glow plug was used as the canopy on the original model. One half inch wide masking tape



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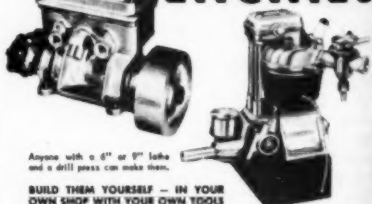
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is used to hold the payload dummy in place by placing it down the fuselage sides and across the bottom.

The model is now ready to be test glided, of course with the Jetex 50B and payload dummy in place. Adjust it to glide to the left in large circles. If the balance is correct, cement the 1/16" fuselage top panel in place. Now, load the Jetex unit and try a powered flight. Launch the plane like a hand-launched glider in a steep right bank. The power from the Jetex motor seems to hold the plane in an ever-widening right circle until the fuel is exhausted. Then, the plane recovers smoothly and begins its glide in left circles. This plane is lots of fun for sport flying as well as contest flying, because you can fly it in your local football field on calm days.

(Editor's note—Brent builds models with his dad, Bob Hawkins. Below is a comment from Mr. Hawkins well worth passing along.)

"I might mention that I think this event is the best event for 'fun' that is available. Because he is a serious competitor for contest flying, Brent builds very few planes 'just for fun'. Nearly everything is made according to AMA rules and intended for competition. This Junior Jet plane has been the source of more enjoyment in after school flying sessions than any other plane he ever built! Therefore, congratulations to George Gardner and Dallas Sherman, of Pan American, for designing an event that is fun to fly."

Radio Control News

(Continued from page 28)

then drying. Swabbing with pure alcohol is sometimes helpful. In the meantime we are checking circuit and tube parameters to determine if gas tubes can continue to be used for our purpose. It is certainly simple to operate and build a circuit using gas tubes, and the range and reliability is satisfactory. More on this later.

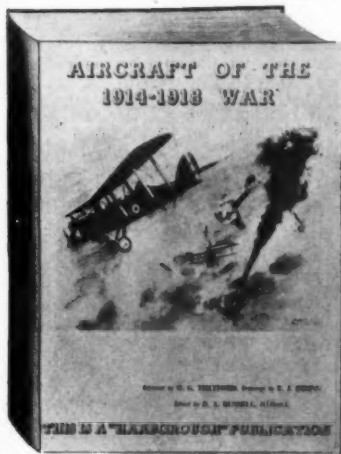
We'd like to point out, for the benefit of the newcomer to RC work, that multi-channel work, fascinating as it may be, is not necessarily the next step-up from single-channel rudder-only flying. Many expert builders and fliers throughout the country use single-channel radios and then develop multi-controls by means of compound type escapements, relays etc. The Bonner Vari-Comp and the deBolt servos have done much to encourage this type of work. The Bonner and Babcock Compound escapements, in addition to the Citizen-Ship and Berkeley units, all having certain innovations, are also quite useful in building new systems. Bob Douthat, of the Radio Control, North Caro. group, employs three escapements and two servos to give him a variety of controls, all operated through an ingenious beep-box. The beginner should have no trouble switching over from rudder only to multi-channel flying if he obtains a reliable single-channel receiver and first learns to master rudder-only flying.

How many times have you wanted to measure the torque of an output shaft or a wound rubber motor? Hank Bourgeois of the DCRG group (Washington, D.C. area) shows how to build a torque meter in Figure 2. To calibrate the unit, hold the tube with the wire arm parallel with a table top. Attach a one-ounce weight to the wire end away from the tube end. Rotate the tube until the wire arm is again parallel to the table top. Make a mark at this point for the 'one-ounce' calibration. Repeat this with a two- and three-ounce weight. In use,

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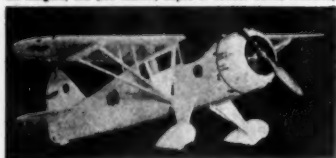
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the tube may be fastened to the output shaft of the device to be measured by a collar and set-screw, the shaft of the meter being properly supported. Stop the movement of the 1" arm, at the tip, and rotate the device you wish to measure. The reading obtained on the dial will give the inch-ounces of torque. Due to certain inconsistencies, such as wire used, method of calibrating etc., this meter should be considered a comparative device. Now you'll be able to tell how much you 'beefed up' that servo system—or did you?

In order that those who wish to attend meets or get-togethers do not miss out on the dates, we'll begin with the present listings. Many thanks to the clubs for getting this information in early enough to be of value to others.

The Bridgeport Aeronauts will hold a Class AA unrestricted RC meet at Wilton, Conn., Route 7, on August 25th. Rudder-only and multi-channel flying will be done. Contact Al Arndt, Willes Road, Newtown, Conn. or Cal Hanks, 36 N. 4th Street, Ansonia, Conn. for further details.

Canadian and northeastern U.S. fliers will be interested in the RC contest to be held near London, Ontario, Canada on June 16th. Although such an event has been held in the past, in this area, the Radio Control Committee of the Forest City Fliers says this will be the biggest and best yet. Attendance is urged for the 15th, in order to get acquainted and get in some pre-contest flying. The rain date will be June 23rd. Contact V. A. Gianelli, 18 Mayfair Drive, London, Ontario, Canada for more information.

W. E. Hamilton, 5062 Lurline Drive, Jackson, Miss. would like to have all RC

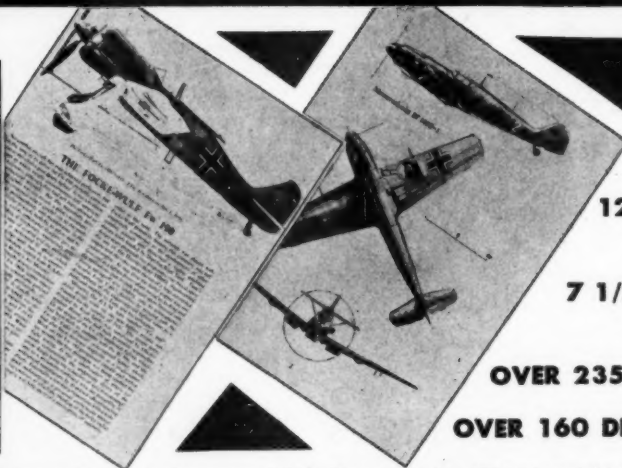
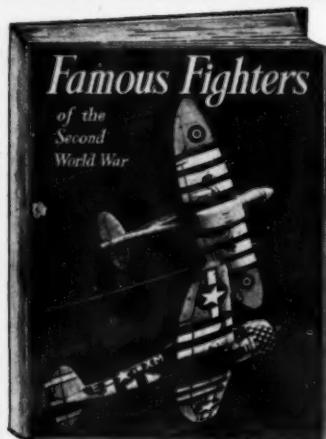
fans and fliers contact him. He recently transferred to Jackson and is looking around for a bit of activity. In fact, if you want to get together with him right away, call 5-8080 in Jackson.

Don't miss the big RC contest on June 29th and 30th at Frederick, Md. This will give all fliers a chance to fly rudder-only, single-channel, and multi-channel with plenty of support for 'rescue purposes' in the form of transportation and air-to-ground communications. Trophies and merchandise awarded to the first three places in each event. Contact Don Clark, 4202 Brookfield Drive, Kensington, Md. for further information.

Good news for the service men is the All Army Model Airplane Meet to be held in August. Details are given in Department of the Army Circular 28-33, dated 11-28-56.

And now let's get back to a subject which we have dwelled on to great lengths in the past, and which is of prime importance to EVERY radio control fan. Get in your FCC registration. Why are we still insisting on this when the records show that there has been an increase in registration? Because it is a known fact that the number of FCC registrations falls far behind the actual number of transmitters in use. More and more applications for the use of 27.255mc have been granted in industry and commercial users. Radio-controlled traffic lights in some of our big cities can be a serious threat to RC planes. (Bethpage Turnpike, through the heart of Nassau County, L.I., for example will have 250-watts on 27-Editor) These lights are now in operation in various cities and more are being installed in congested areas. True, they may not be in operation all of the time, but

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then it only takes one spin to wipe out a \$500.00 investment. If you want a new frequency or band, see that you and your fellow user of 27 or 465-mc sends in a registration form.

More news from Canada in the form of a plea for RC activities and builders comes from the Ottawa R/C "Specialists". Frank Stokes, Bells Corners P. O., Ontario, Canada, tells of flying done with a Piper Cub, powered with a twin-cylinder ignition engine, controlled by a Deltron receiver and compound escapement, operating rudder and engine. This plane, built by Don Prentice. F. Stokes, has a Rudderbug which has taken quite a beating during the initial stages of learning to fly RC. Plenty of home-made gadgets are in evidence in the club, and the members would like other Canadian RCers to contact the club president, Don Prentice, at the above address. We'll try to give you happenings in the Canadian RC field from time to time, since they have no model publication.

Mr. Ben Bacon of BADACO Mfg. Co., 2801 Penick Street, Shreveport, La., tells of RC events in the Creole country. A Major Brook flies a J-3 Cub with 5-channel RME, a Live Wire Senior with same rig and controls, a Rebel with a 3-channel RME setup. An unusual combination is afforded by L. J. Lisco, age 17, and his grandfather. L.J. flies a J-3 and a Tri-Pacer, both with Badaco single-channel equipment and Bonner Vari-Comps. Granddad flies, or rather flew, a Bootstraps, until he forgot to wind the escapement one Sunday. Another ship is being built. The Shreveport area has a new club of 40 members, known as the Shreveport Sky Demons. While mostly U-control fliers, a one-day demonstration

of RC by Ben Bacon resulted in one of the hobby shops selling eight RC planes the next day.

Awhile back we mentioned the formation of a new California group of RC fliers. This group is now known as the Pacific Radio Society, a Federation of Pacific Coast Radio Control Organizations. The object of this group is to increase inter-club activity, strive for uniformity in contest rules and regulations, and to represent as many west coast clubs as possible in National radio-control affairs. If other areas of the country, say the middle west, the east coast and the south, did this sort of thing, rules and regulations and FCC negotiations could be passed more quickly. For those clubs interested in this west coast group, contact Mr. John F. Bischoff, 3428 Middlefield Road, Palo Alto, Calif.

The 1957 Yankee Championships will be held at the South Weymouth N.A.S., South Weymouth, Mass. on June 29th and 30th. All types of indoor and outdoor flying will be held, with Radio Control flying being scheduled for both days of the meet. Overnight accommodations available on the base for only 50 cents a night, and the 40 silver cups included in the more than \$2000.00 worth of prizes should make this an attractive meet. Contact Contest Director, Ed Dolby, 25 Exchange Street, Rockland, Mass. for entry blanks and more info.

When traveling through the New York area we'd hear of 'subway' models. These were models, usually U-control, packed in a handy carrying case when traveling the subways. Ken Willard of the LARKS, has gone one better and produced the Traveler, mainly for carrying aboard airline flights. Nothing like a short RC hop when

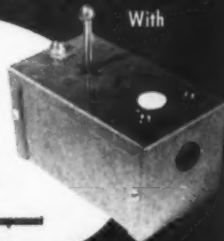
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- ☐ CONVAIR'S DELTA: Jetex Scale. June '57
- ☐ SWAT: 1/2 A Free Flight. June '57
- ☐ LIL DYNAMITE: .15 Stunt. June '57

• • • •

- ☐ SANTANITA: A.1 Nordic. May '57
- ☐ CORSAIR: .29-.35 U/C. May '57
- ☐ GYRO GLIDER: Free flight. May '57

• • • •

- ☐ DOUGLAS B-66: .049 ducted fan. Apr. '57
- ☐ GAMBLER: Stunt, .29-.35. Apr. '57

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waiting for your flight to leave. The 30" model weighs but 15 ounces and the wing folds in the center, being locked in the open position by a small canopy that holds the two center wing ribs together. The entire unit, consisting of airplane, transmitter, antenna and accessories, fits into an 8" x 13" x 21" case. Radio is by Deltron and the engine is a Half-A job.

We predict this next item will be a smash hit with all RC'ers who are 'hams' and also for the RC'er who has a 'ham' friend. There is an RC network, operating on 29.138 mc (10 meter band) at 8:00 AM Los Angeles time on Sunday mornings. Doc Hauck, W6YFT, handles the chatter from the LA area. This is another LARKS enterprise.

As this was written, we witnessed the first RC boat run of the season in Upstate New York. Kelly Day, Wappinger Falls, N.Y., had his Sterling American Scout out for a trial run, even before painting it and putting on the super structure. The fibre glassed hull eliminated the need for paint at this time. Powered by a Pittman Super Panther motor, this model gave an excellent demonstration of maneuvering. Left and right proportional rudder, full and half speeds ahead and reverse, accomplished with a single-channel receiver plus a few relays. In fact, this job looks like a floating telephone exchange. Since considerable ballast was needed, the weight was put into batteries for both the drive motor and the RC gear and accessories. The total normal power capability of his supply is about 50 watts, with 75 watts being the peak output. This means that this model freighter could handle the power requirements of all the transmitters at an average size get-together. We'd like to point out again, if you need weight to balance out a boat of this size, put the weight into something useful, such as batteries, instead of iron or lead bars.

We've pictured RC activities in England, Europe, Australia and South America. A photo shows Ramon Torres holding a deBolt Rebel and Bebo Fernandez cleaning up the model after its having landed in a mud puddle. Ramon and Bebo are from Havana, Cuba, and the flying site looks enticing. Ramon is considered one of the foremost RC specialists in Cuba.

The rest of the country better start coming up with novelty RC events if they want to keep pace with the west coast. The East Bay Radio Controllers have programs under way for endurance, cross country and speed events, in addition to bomb dropping and pylon racing. In regular flying sessions, flights are limited

to a total of 10 minutes, from take-off to landing. This conforms to AMA rulings.

Photo shows the new Badaco 180MR receiver. The receiver measures but 1 1/2" x 2 1/2" x 2 1/2" and weighs but 3.2 oz. Receiving range is said to be in excess of two miles. Extremely rugged, this receiver has been dropped 40 feet onto a grass-covered yard and has operated perfectly after two such drops. The 180MT transmitter will operate on either straight carrier or tone by merely removing the 3A5 tube. A bottom loaded 36" antenna provides for better radiation and the B-plus drain on tone is 13ma and 17ma with carrier only. Transmitter is \$34.95 and the receiver is \$24.95, both available through your local hobby shop. Badaco promises some new developments in the field of multi-channel gear, which we'll report on when it's available.

National Electronics, Inc., 2433 Seymour Avenue, Union, N.J., announces a unique RC receiver, known as Model 127. This unit uses an RK-61 and a special transistor which will pass 20ma through the relay. This \$18.95 receiver weighs three oz. and measures 1 1/2" x 2 1/2" x 3 1/2". Housed in a heavy gauge aluminum case, the receiver is internally shock mounted, providing for a virtually indestructible unit. Model 227, selling for \$26.95, is basically the same as the 127, except it employs a transistor converter, thus eliminating the B battery. This unit is 1" longer than the 127 and will operate with five 1.5v cells. We'll give you a report (Continued on page 58)

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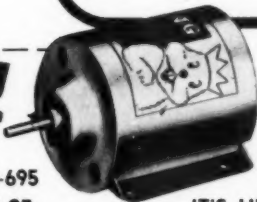
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Man At Work

(Continued from page 40)

► Carl Goldberg Models prize incentive plan to spur interest in contest flying, is one of the most constructive, helpful ideas in recent years. Works this way. Friends or neighbors set up simple flying model contest, with possible help of Scoutmaster, teacher or playground director. Entrant pays fee of 50¢. This and a cut-out plane name from one of Carl's kits procures from the firm a choice of prizes, depending on number of entrants. The flying plan appeals to us. Model building was built up-

on contest flying which contributed new developments the way Indianapolis helped the auto industry in earlier days. Plenty of contests today, too, but kids don't know how to get started . . . Neptune model on June issue cover was not a Eureka kit we hear, but an Aristocraft Superprefab, plans by Walter Musciano. Kits available from Polks' and other leading distributors, and, presumably, the dealer . . . Control-line fans, vicinity of Buffalo, how about Canadian contest, June 30, at St. Catharines, Ontario. (Allan Staruch, St. Catharines Groundhogs, 39 Franklin Blvd.) Oops, no more space.



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on the operation of these units when our tests are complete.

Bonner Specialties has a new escapement known as the Single. This 6/10-ounce unit operates from three volts and 1/4" rubber for extra-heavy duty operation or 3/16" rubber and 1 1/2 volts for normal operation. This unit should be excellent for power operation of throttles and other auxiliary controls. Self-neutralizing or 'dwell' type of action may be easily obtained on this \$5.95 escapement.

During the latter part of March the IRE (Institute of Radio Engineers) held their annual convention in New York City, the largest of its kind in the country. Many new components were exhibited, although the majority of them are presently unavailable to the average RC fan. It is to be expected that, in time, new items will reach the open market. Some of these include sub-miniature relays, smaller than a postage stamp, new batteries, both of the secondary and primary types, toggle and push-button switches no larger than the end of your little finger, new transistors for RF work, sub-miniature transformers and many other miniature and sub-miniature components. These items will give you something to dream about and we'll let you know when they become available to the individual or through dealers.

Berkeley Models, Inc., West Hempstead, N.Y., now has their new Waco Cabin model on the market, selling for \$9.95. This 52" beauty will take from a .14 to a .49 (for U-control conversion) engine and weighs 4 1/2 pounds, complete with radio gear. Some interesting facts on this model come from Hank Struck, the designer. Hank lashed the fuselage to the hood of his car and then drove up to 80 mph, in order to test rudder and elevator action. All control surfaces functioned perfectly, proving that even large scale surfaces can be operated properly, at high speed, by escapements. The Berkeley escapement was used in this ship. Needless to say, a smaller degree of control movement is required when using large surfaces. Here is a scale RC biplane that should be making its appearance at late summer flying sessions.

This next item may seem trivial, but we know that there isn't a modeler around who won't go for it. Plain, simple rubber bands. But then again, they are not the ordinary kind. The DeBolt Model Engineering Co., Williamsville, N.Y., now offers pure gum rubber bands in three sizes, all selling for \$1.25 per quarter pound. Size #16 is about 1 5/16" in diameter with a cross-section area of about .040" square. Size #62 is about 1 1/4" in diameter and 7/32" wide. Size #64 is 2 1/4" in diameter and 7/32" wide. Why pure gum rubber? Pure gum rubber is unaffected by heat and cold, sunlight and hot fuels.

Now hear this. W. S. Deans Co., Downey, Calif., makers of the miniature five and eight-channel reed banks, announces that the eight-channel reed bank has been reduced in width to the size of their five-channel unit. Size of both units is now .88" w x .93" h x 1.38" long, with the weight being 7/8 ounce. These were written up in the May issue of MAN.

Ace Radio Control, Higginsville, Mo., announces that their new price on RK-61 tubes is now \$3.95. This increase is due to hand selection of tubes in order that the tubes will work in the majority of RK-61 circuits. All tubes from ACE will function in two-tube RK-61 circuits.

(Continued on page 60)

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Polk's Modelcraft Hobbies, 314 Fifth Avenue, NYC, has outdone themselves in importing an English built electric motor known as the Taycol Supermarine. This \$14.95 motor runs on from six to 12v and draws 1 amp at 6v, no-load. Featuring composition brushes and a 1/4" shaft, this unit should handle the largest RC boats, such as the Sterling Battleship Missouri, American Scout and the large cabin cruisers. About four times the size of a Pitman Panther, we were unable to prevent the motor from starting (6v) when getting a firm grasp on the shaft. You'll need the weight in a large boat, so why not put it into something useful, instead of ballast.

Hexacon Electric Company, has a new soldering iron. This 50-watt soldering pencil, as it is called, has a 1/4" tip and weighs but 2 ounces. The tip and heating element are replaceable independently, without returning to factory. However, the construction of this iron is such that it is capable of continuous operation, 24 hours a day. It will operate on AC or DC and is

available for 110 or 220v. Hexacon Electric is a well known name in this field. Hexacon Electric Company, 578 West Clay Avenue, Roselle Park, N.J.

CG Electronics Corp., 305 Dallas, Albuquerque, New Mex., has a new receiver, their model RT-1. This is a transistorized receiver, operated from a 100% modulated tone transmitter. Extremely neat and compact, it measures 15/16" x 19/16" x 2 11/16" and weighs two ounces, or 3 3/4 ounces with batteries. The B voltage is 30 volts with a 1.25ma idle and 5ma with signal. No bias battery is needed. Our test receiver worked right out of the box, using the CG T-12 transmitter and also one of our own design. With a two-foot antenna on the receiver, the range was in excess of 1,000 feet on the ground, although the indication was that the range could have greatly extended. Actually, it was too cold to stay out for further checking. The unit sells for \$39.95 factory assembled or \$29.95, with relay and transistors, for the parts package.

Mold It!

(Continued from page 16)

of mud, and make sure all lumps are stirred out. Plaster of paris "sets up" or hardens relatively fast so it is best to mix in small batches. If a deformation occurs, or a change or modification is necessary after the plaster is hard, water applied to the surface by brush or splashing on by hand eases the scraping or carving. Carving can be accomplished with a strip of sheet metal, putty knife, or knife. When adding more plaster to a surface always wet the area just prior to application or the two will not adhere. If a female mold is required, build a box around the male mold, and after shellacking, waxing, and greasing it, pour plaster over it then remove when set. Exercise caution on draft angles to eliminate binding when removing female mold.

A draft angle is the angle any or all of a section of a mold makes with the surface to which it is mounted. In the case of a male mold all surface areas have to slope inward towards the center of the mold, to insure ease in removal of a female counterpart. Where work is done directly on a male mold, slight inverse draft angles are tolerable due to the flexibility of the laminates.

One of two methods can be used in constructing a mold. If the part is symmetrical, one template and guide do the job by "sweeping" the shape as shown in figures 1 to 3 for rotated forms. For a complex shape, the template frame method is used, as in figures 4, 5, 6, and 7. If for some reason the part lacks rigidity, a finger massage with model cement should do the job. Application of the cloth and glue



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—Aeronautical Engineering Review

are the same in both cases. This is shown in figures 8 to 10.

Remove the part from the mold to test-fit it to the model then replace it on the mold and trim. If excessive coats of glue were applied, drying may take days, so be patient and allow to thoroughly harden before mounting it on your model to prevent any deformation.

To overcome the rough surface, tissue is doped on prior to the final finish. Making the part in a female mold provides a smoother surface but is very difficult to work in.

Brush in a small amount of glue and prior to its drying, remove the part from the mold, for it is probably sticking. Clean the mold of glue spots then lightly grease it with vasoline or shortening to act as a parting compound and replace the part over the mold. Caution: if the grease is put on first it will impregnate the cloth preventing the glue from soaking in. After the previous has hardened completely, additional coats of glue can be applied until the part is sealed.

After mounting the part on the model, a layer of tissue is doped on and finished conventionally to suit your own requirements.

Having completed the job, here is a suggestion for the plaster molds. Paint them with appropriate decorations and perhaps a felt pad for the bottom, presto, book ends and door stops.

Curtiss R-6 Racer

(Continued from page 19)

followed by the various fairings. These include the 3/16 in. balsa pylon fairings, tail cone, lower nose blocks, engine cowling blocks and rear engine fairing blocks. Cut openings in the planking for the cockpit and lower wing. Cement the lower wing and fairing block in place and install the headrest. Let's not forget the three 1/16 in. dia. alum. tubing rigging wire reinforcement which cross through the fuselage.

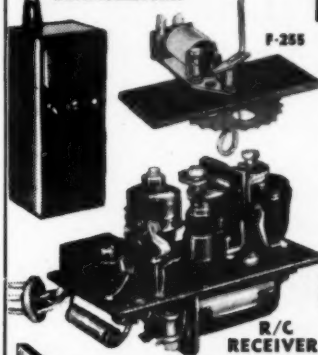
The landing gear will finish the fuselage assembly. Note that the forward landing gear brace wires are sweat soldered into a length of tubing which has been cemented through the nose block while the rear landing gear brace wires are merely inserted in the tubing reinforcements at bulkhead #3. After the spreader bar and various brace wires are installed, the balsa fairings may be added to the spreader bar and main gear struts in that order. The 1/2 in. plywood interplane struts are the last wood parts to be made. These and the fuselage assembly should be sanded smooth and have tissue or silk doped over them.

We should now be ready to finish the model. At this point, all the wood components should have been completed, sanded smooth and should have had silk or tissue doped over each part. My own model then had six coats of Aerogloss clear dope brushed on. This was followed by six brushed coats of Aerogloss balsa fillercoat. Both wings and the horizontal tail surfaces were sprayed with eight coats of Aerogloss gold. With the gold masked off, the fuselage, fin, pylon, landing gear fairing struts and header were sprayed eight coats of Aerogloss black. Keep in mind that these coats of dope and fillercoat were wet-or-dry sanded at every second coat. The larger, easier insignia, that is the stars and rudder stripes, were then masked off individually and sprayed four coats of dope which were not sanded. Smaller details of the eagle and service number on the rudder which

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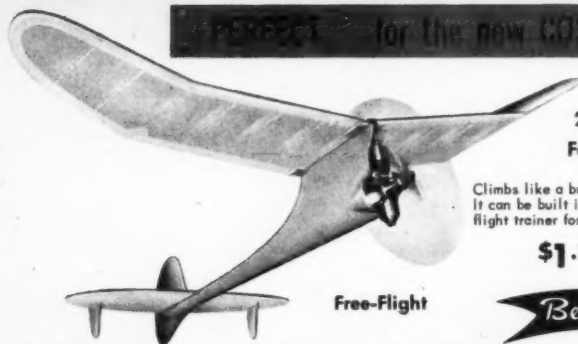
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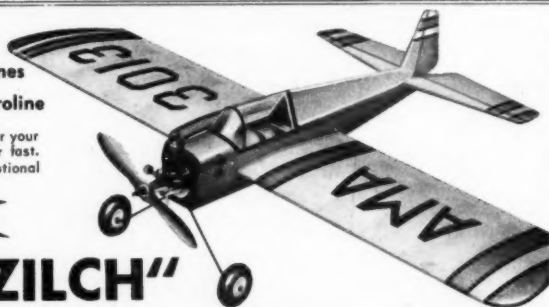
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would be exceedingly difficult to mask
off with tape were sprayed four coats of
dope with the aid of small stencils. The
entire model was then hand-rubbed to a
sparkling finish. A lot of work you say! A
smile leaps to my face every time some-
one asks where they can get a plastic
model like that one. It's worth it!

A little final assembly and we'll have
'er done. Cement the interplane struts
into the cut-outs in the lower wing. When
they are dry, the top wing can be ce-
mented to the pylon and inter-plane
struts. This is one biplane where there
should be no alignment difficulties. The
rigging wires are run through the fuselage
reinforcements and then pressed into the
tubing reinforcements in the wings—cut
and try method. The exhaust stacks are
lengths of 1/8 in. dia. brass tubing, and the
Scalemaster wheels duplicate in size and
shape those old style wheels of yesteryear.
With the addition of the windshield, vi-
bration dampeners, rudder, engine, prop
and spinner, we can be off to the races.

A final note of caution before closing.
This is a small model which has plenty
of power. She sets the ground at a high
angle of attack and has a blazing take
off. You've got a real little racer on the
end of that U-reely, so be on your toes,
and don't take any wooden pylons.

Pen Pals

Frank Collier, Rt. 2, Box 187, Madison,
Fla., wants to sell Mac 29 Super Stunt,
Webra 15, Club .049, and Cub .040
Diesel. . . . 16 year old Clyde Oyster,
434 Bellevue St., Marietta, Ohio, has New
Zealand Pen Pal, now both want one in
Japan.

Wants to talk shop with younger build-
ers, Sydney Hodges, 925-31st Ave. South,
Seattle 44, Wash. . . . Has MAN back
issues to 1930, Lester E. Klean, 17 W.
36 White Pine Rd., Bensenville, Ill. . . .
15 year old P. J. Staples, c/o Racecourse,
Wanganui, New Zealand, wants US or
Japanese correspondent. U-control, his
dish Attention, please: Allan (first
or last name), St. Claire (possible last
name), 1 St. Minver Ave., N. Sydney,
Australia, will you contact old Pen Pal
Emanuel Radoff, 276 Schley St., Newark,
N.J., USA Another New Zealander,
Raymond Morgan, 27, c/o National
Airways Corp., Harewood International
Airfield, Harewood, would correspond
with American modelers. Flies almost all
classes, is club captain Wants
Scientific Commodore (lots of people do):
R. L. Dolds, Skyway Room 1902, Fair-
born, Ohio.

Bruce Bonner, 124 Winters Rd.,
Pahanui, Christchurch, New Zealand
wants US Pen Pal He needs parts
Super Cyke ignition engine; A. W. Elmer,
12860 23rd Ave. S.; Seattle 88, Wash. . .
Royal Australian Air Force man is 18
year old Barry Thompson, A53Q88, Air-
craftman; Thompson, B.Y.; Barracks Sec-
tion, Base Squadron; RAAF Lareton, Vic-
toria, Australia; wants US AF Pen Pal
. . . . Will trade back numbers English
Model Aircraft magazine for old MAN's
T. Bell, 59 Castlerigg St., Langley Estate,
Middleton, Manchester, Eng. . . . R. T.
Cox, 57 Orsett Rd., Grays, Essex, Eng.
pleads for Mac 60-20 parts. In RAF he
goes for speed, tow Looking for
old (historically) engines, M. L. Beach,
68 Brae Ct., Kingston Hill, Kingston,
Surrey, Eng.

Wants Capitol Beechcraft kit: Glenn L. Martin, Dorn G. Sparatan School of Aeronautics, Tulsa, Okla. . . . 15 year old L. R. Ohms, Jr., P. O. Box 422, Shepparton, Victoria, Australia, wants US Pen Pal liking ukie and small FF Helmut Braun, Braunschweig, Kriemhildstr. 6, Germany, would swap German Diesels, various plans American plastic model fans asked to write Dave Wiseman, 2 Cumberland Park, Acton, London W.3, Eng. . . . well known old-timer, Charlie Grant, 166 Center Ave., New Rochelle, N.Y. is back at models, wants to hear from other "boys."

1/2 Tone

(Continued from page 22)

Receiver Parts List

Capacitors: (1) Aerovox NPO-S1, 1 MMF.; (1) Aerovox Type BPD, 33 MMF, Ceramic; (1) Aerovox Type BPD, .001 MFD, Disc Ceramic; (1) Aerovox BPD, 220 MMFD. Disc ceramic; (1) Aerovox BPD, 470 MFD., Disc Ceramic; (3) Aerovox BPD, .01 MFD. Disc Ceramic.
Resistors (All Half Watt): (1) 2.2 MEG plus or minus 10%, (1) 10 MEG., (1) 10 OHMS, (1) 47K, (2) 1 MEG.
R. F. Choke: 50 Microhenry—National R-33

Coin Form:

1/4" dia. CTC type LSM with red dot iron core

Relay:

GEM 7200 OHM or similar relay or comparable resistance

Tubes—1 each: 1U5, 3V4

Diodes (2): 1N 34

"C" Battery (1): RCA VSO-87

2 7-pin subminiature sockets

1 1/4" dia. grommet (for cable)

1 5 prong plug and connector

1 Terminal strip—Cinch #52

1/32" Sheet aluminum

#32 enameled wire

Hook-up wire

Insulating washers for antenna lead thru

—National XS-9

Foreign Notes

(Continued from page 37)

development of the Fw.190. These latter are for .15 to .30 cu. in. motors.

In Brief . . .

Cuba . . . To save building many different complete designs, Tony Alvarado of Havana has a stock polyhedral wing which fits Half-A free-flight, Wakefield rubber and A/1 glider. Panels span 6-18-18-6 with 3/8-5-5-3/8 chords and 5-1-1-5 dihedral, giving projected area of 216 sq. in.

New Zealand . . . No matter where you go, the stock wear in Class A team racing (2.5 c.c.—.15 cu. in.—and the most popular foreign team racing class) is the Oliver Tiger Diesel. In the 1957 New Zealand Nationals, all the finalists, once again, used Oliver motors.

Norway . . . The flying field problem seems to be universal, but for Oslo modelers it has a new twist. In winter they can use a frozen lake, but in summer the regular free-flight jobs have to be put away and out come the control-liners, floatplanes and flying boats.

Italy . . . We have received notification from the distributors that some production models of the .15 cu. in. Barbi B.40 engine (124 mph at last year's World Speed) have been found to be up to 5% over the 2% c.c. international limit due to a slight error in the stroke measurement. Any B.40 owner finding his engine to be in excess of the standard stroke (15 mm.) can obtain a replacement shaft, free of charge, from the distributors.

"MODEL OF THE MONTH" by Berkeley AERONCA "C-3"



RADIO-CONTROL . . . FREE-FLIGHT . . . CONTROLINE

TWO SIZES TO CHOOSE FROM:

"KING SIZE FLYING SCALE"

1 1/4" Scale—54" Wingspan

AERONCA "C-3"

For Radio Control—Free-Flight—Controline

.099 Engines R.C.—.074 Free-Flight—.15 Engines Controline

Designed for rudder control with optional elevator and motor control. Alleron can be set for trim. Advanced R.C. flyers may wish to servo-actuate the alleron. Takes up to Tone-Aerolite size receiver. All equipment easily accessible through the cabin. Controline version is fun to fly with motor control.

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less wheels

"1/2A" CHAMPIONSHIP FLYING SCALE

1" Scale—36" Wingspan

AERONCA "C-3"

For 1/2A Free-Flight—Controline

.035 to .051 Engines Free-Flight—.099 Engines Controline

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\$2.50

less wheels

This kit now joins other Berkeley 1" Flying Scale designs, a series which has won this event at the Nationals consecutively since 1938. Structurally simple, the "C-3" can be assembled and flown in a few days time. Flies well with high or low power free-flight or controline. Plans show both types.



Kit No. 7-2

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U. S. NAVY

F11-C2

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Construction is fast and easy, thanks to pre-shaped blocks, formed cowl, struts, shaped wing edges etc. At your dealer—



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Kit Only

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NAVY DIVE BOMBER

Controline

For .14 to .36 Engines—31" Wingspan—1/2" Scale

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Assembly time is very very low, thanks to the curved and hollowed fuselage blocks, the metal ring cowl, embossed canopy and other fabricated parts. You'll be proud of it.

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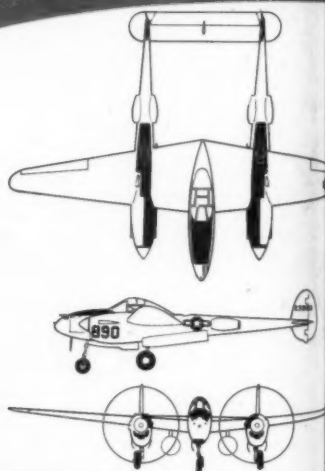
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"P-38 LIGHTNING"

Control Line



The famed Lockheed "P-38" Interceptor was designed in 1939, - saw action throughout World War II, - proving its versatility as a fighter, fighter bomber, a skip bomber, a tank buster, strafing, rocket carrier, camera plane, and ambulance plane. Powered by two Allison V-1710-F30 engines, rated at 1475 hp. each, the "P-38L" had service ceiling of 40,000 feet, a 3000 mile range and was capable of 425 m.p.h. The late Major Bong downed 40 enemy planes with the "P-38". Armament 20mm cannon, four 50 cal. machine guns in nose, and bombs, rockets, or jettisonable fuel tanks, giving the craft firepower of a cruiser broadside, the bomb load of an early type "Flying Fortress", - the weight in fuel equivalent to a total weight of some of the Japanese fighters!

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In kit model form, the "P-38L" is an excellent design for twin engine control line flying. Dramatic in appearance, it draws attention on any field. Model has excellent control characteristics on 100 foot length "Monoline". ("U-Control" is optional) Flies well on one engine, and a single engine may be installed if so desired. (.29 to .35) With the engine nacelle booms and fuselage pod already carved and hollowed, the remaining construction is quite simple. We think you will be in for a thrill as your power-packed "P-38" howls across the field, and lifts into the air... an outstanding kit and a dream of a ship to fly!

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• Carved & Hollowed Fuselage

• Full Size Berkeley Detailed Plan

• Carved & Hollowed Nacelles

• Formed Celluloid Bubble Can

• Authentic Multi-color Decals

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• Formed Wire Landing Gear

• Die-Cut Balsa and Plywood P

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85¢ pint



HOTTEST FUEL MADE

A genuine competition fuel specially compounded for WINS in all free flight and control line events. May be used straight or as a blend. In an actual test, a FOX 35 Combat Special, using Hi Nitro, produced 60% more power than with ordinary fuels.

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CAUTION:

Many motors cannot operate with straight Hi Nitro. Your motor should be fueled with a progressively higher proportion of Hi Nitro to Superfuel until no further gain in power is obtained. This "custom blend" is the most efficient fuel for your motor.

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25" Wingspan .049 Engines

HIGH PERFORMANCE DUCTED FAN

DOUGLAS **SKYRAY** F4D-1

Designed by: Henry Struck
Three Time National Scale Model Champion

FULL SCALE AIRPLANE:

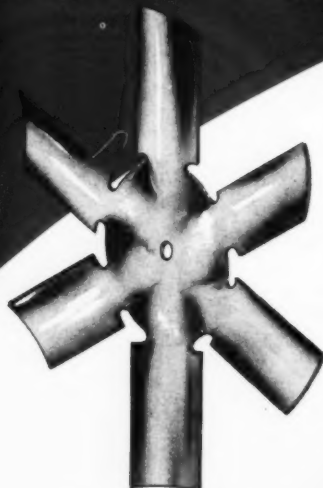
The F4D-1 "Skyray" is a standard carrier-based fighter U.S. Navy. Over 100 of these delta type interceptors operation, and production orders will continue through

The "Skyray" officially set a world speed record for a kilometer closed circuit of 728.11 miles an hour. The is powered by the famed Pratt and Whitney "J-57" jet

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First kit model with internal ducted fan to produce jet. Henry Struck has been experimenting and testing this propulsion for the past five years, - resulting in a refined ducted fan design, developing six inch thrust, - ample power for free-flight or competition sight flights were common on original Skyraiders.

New pull-starter type engine, fuel and glow plug connections make starting engine possible without fuel or opening hatches. Easy to build, easy to fly.



Aluminum pusher type Fan is included, and is ready to use.

• Ready-to-Install Metal Propulsion Fan

• Formed Celluloid Bubble Canopy

• Complete Full Color Decals

• Die-Cut and Shaped Balsa Parts

• Covering Material

• Full Size Berkeley Detailed Plans and Special Instructions

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